Public Health Scotland

The National Drug-Related Deaths Database (Scotland) Report

Analysis of Deaths Registered in 2021 and 2022

An Official statistics release for Scotland

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Introduction

The National Drug-Related Deaths Database (NDRDD) was established to collect detailed information regarding the health and social circumstances of people who had a drug-related death (DRD) in Scotland.

The purpose of this publication series is to further analyse DRDs on which Accredited Official Statistics have already been published by National Records of Scotland (NRS) [1,2] in order to provide insights into the lives of those who died and highlight potential areas for intervention.

This report contains the following sections:

- an account of the data collection and analysis of the NDRDD cohorts (**Methods**);
- a description of results, focusing on 2022 NDRDD cohort of deaths, alongside a discussion of trends since 2012 (**Results and Commentary**); and,
- overall **Conclusions**.

This report outlines a number of data quality issues. A Short Life Working Group (SLWG) on Drug Death Reporting was established to consider these and other matters, including modernisation of NDRDD data collection and reporting. Public Health Scotland (PHS) published a **summary** of the Short Life Working Group findings and recommendations in April 2022. In line with these recommendations, this publication is accompanied by an infographic summary (**available on the publication page**), offering an alternative output and visualisation to enhance information accessibility for various audiences. Further information on the output of the SLWG (along with further information on NDRDD data collection and data analysis) can be found in the **Appendices**.

The data described in this report are collected by the local Data Collection Coordinators in each NHS Board area. The authors would like to thank Data

Collection Coordinators for their hard work and dedication, without which this report could not be produced.

Main points

Demographic Profile

- NRS reported the total number of DRDs decreased from 1,330 (NDRDD: 1,317) in 2021 to 1,051 (NDRDD: 996) in 2022, marking the first substantial year-on-year decrease following several years of rising figures.
- As in previous years, most DRDs registered in 2022 were among men (66%).
- The average age of people who had a DRD increased from 39 years in 2012 to 44 years in 2022.
- Over half (52%) of the people who died of DRD in 2022 lived in the 20% most deprived neighbourhoods in Scotland.
- Most people who had a DRD lived in their own home (81%). Sixty percent lived alone all of the time. The percentage of people in these categories increased since 2012.
- In 2022, 387 children were reported to have lost a parent or parental figure as a result of a DRD.

Substance Use History

- In 2022, most DRDs (86%) were among people previously known to use drugs.
- Of those known to have used drugs, 74% had used them for eleven or more years and 45% were known to have injected drugs.
- In 2022, over one third of people who had a DRD (41%) were prescribed an OST drug (mainly methadone) at the time of death. The percentage of

people who were prescribed an OST at the time of death has increased since 2012.

- In 2022, of those who had experienced a previous overdose and the length of time since the previous overdose was known, 33% (148) had overdosed within six months of death.

- In 2022, around one quarter of people who died (23%) experienced alcohol-related problems in the six months prior to death.

Medical and Psychiatric History and Significant Life Events

- In 2022, 54% of people who had a DRD had a medical condition recorded in the six months before death. Respiratory illness (24%), epilepsy (8%), back pain/injury (6%), and Blood Borne Viruses (5%) were the most commonly recorded recent conditions.

- In 2022, 50% had a recent psychiatric condition recorded in the six months prior to death. Depression (30%) and anxiety (23%) were the most common psychiatric conditions recorded in the six months prior to death.

- In 2022, 51% of people had experienced a significant event in the six months before death (most commonly, ill health or a recent diagnosis).

- 17% of people who had a DRD had experienced domestic violence prior to death in 2022. Sexual abuse at some point prior to death was recorded in 15% of DRDs in 2022.

Contact with Services

- In 2022, two thirds of people who had a DRD (66%) were in contact with a drug treatment service at some point in their lives.

- In the six months prior to death, over half 53% were in contact with drug treatment services. This is a slight increase from 2021 when 50% had recent contact with drug treatment services.

- In 2022, 20% of people who were being treated for their problematic drug use had been seen within one week of death, while 62% (277) had been seen within one month of death.

- In 2022, 38% of people who died were in recent contact with non-drug treatment services (e.g. social work, housing). Mental health services contact among DRDs increased over time from 2012 to 2022.

- In 2022, 29% of people who had a DRD had been discharged from an inpatient stay in a general acute hospital and 3% had been discharged from a psychiatric hospital in the six months prior to death.

- In 2022, 13% of people who had a DRD had been in police custody in the six months prior to death.

- Six per cent of people who had a DRD had been in prison custody in the six months prior to death.

- In 2022, 65% of people (73% of those whose death was opioid-related) were in contact with a service with the potential to address their problematic drug use or deliver harm reduction interventions in the six months before death.

Circumstances of Death

- In 2022, 76% of people who died of DRD consumed the drugs in their own home and 68% died in their own home.

- Under half of DRDs (46%) occurred when others were present at the scene of the overdose. In 2022, the percentage of deaths where others were present at the scene of overdose (and potentially able to intervene) was

lower where people lived alone all of the time (29%) or were aged 45 or over (38%).

- Where known, take-home naloxone (THN) supply has increased over time (33% of 2022 DRDs). Among people who had previously been supplied with THN, 64% had naloxone available at the scene of death.

Toxicology Data

- In 2022, multiple substances were implicated in over three quarters (83%) of DRDs.
- Opioids (methadone, heroin, morphine or buprenorphine) were implicated in over two thirds (72%) of DRDs in 2022.
- Methadone (47%), heroin/morphine (41%) and etizolam (38%) were the substances most commonly implicated in deaths in 2022.
- The number of DRDs where cocaine was implicated increased across the time series, to 36% in 2022. Cocaine was implicated in roughly half (49%) of DRDs among people aged under 25 years.
- Gabapentin and pregabalin implication increased over time, potentially due to their use to enhance the effects of opioids. In 2022, gabapentin or pregabalin were implicated in 36% deaths.
- Etizolam (a ‘street’ benzodiazepine) implication decreased sharply from 58% in 2021 to 38% in 2022, following international prohibition in 2021. Changes in the overall number of DRDs closely mirrored trends in ‘street’ benzodiazepine implication, suggesting an association between availability and harms.

Prescribing

- Among opioid-related deaths, the percentage of people prescribed an OST at the time of death increased from 34% in 2012 to 54% in 2022.
- In 2022, most OST prescribing at the time of death was well established (one year or more: 84%), via supervised consumption (64%) and within recommended therapeutic dose guidelines (65%).
- In 2022, 48% of people prescribed OST had heroin/morphine present at death, similar to the percentage among those not prescribed OST (47%).
- Prescribing of gabapentin or pregabalin within 90 days of death increased over time to 29% in 2022. Over the time series combined, gabapentin or pregabalin prescriptions were more common among those prescribed OST (30%) than those not prescribed OST (28%).
- Co-prescribing of methadone and either citalopram or anti-psychotics (all associated with a life-threatening ventricular arrhythmia called torsades de pointes) occurred in 91 (9%) cases in 2022. These drugs were co-present in 52 DRDs, 37 (67%) of which were preceded by recent co-prescribing.
- Recent prescribing of strong opioid painkillers was very rare. In 2022, oxycodone or fentanyl were only prescribed to 20 people who had a DRD.

Methadone-implicated deaths

- Methadone was implicated in 47% (471) of DRDs registered in Scotland in 2022. The percentage of these deaths that occurred among people not prescribed methadone was 29% (137).
- It is highly likely that COVID-19 pandemic-related measures influenced opioid availability and drug diversion, increasing methadone-related risks. Overall methadone implication was higher in deaths registered in the second half of 2020 (57%) and in 2021 (48%) compared to 2022 (47%). Methadone implication among non-prescribed individuals was also higher in

the second half of 2020 (36%) and in 2021 (35%) compared with 2022 (29%).

- In both 2021 and 2022, people who were prescribed methadone and had it implicated in their death were generally on long-term, supervised prescribing regimens within recommended dose guidelines. Almost all had other drugs implicated in their deaths.

- In both 2021 and 2022, people who were not prescribed methadone yet had it implicated in their death were younger than those prescribed methadone at the time of death and had relatively low levels of treatment experience. Both age and treatment experience were lower among non-prescribees in 2021 (a year impacted by the COVID-19 pandemic) than among the same group in 2022.

Methods

Investigating 'Drug-Related Deaths'

In the event of an unexpected death, police officers attending the scene of death complete a Sudden Death Report which is passed to the Procurator Fiscal[1]. The Procurator Fiscal then calls for a full pathological and toxicological post-mortem examination to be conducted to determine the cause of death. The findings from these investigative processes are used by NRS to determine the number of DRDs in Scotland.

Defining 'Drug-Related Deaths'

Both the NDRDD and NRS reports use the 'baseline' definition for the UK Drugs Strategy (described in **Annex A** of the NRS report on 2022 deaths [1]). All deaths in Scotland are registered with NRS, who identify DRDs based on a supplementary questionnaire (an ME4 form) that is completed by the forensic pathologist.

Following the recommendations of the Drug Death Reporting Short Life Working Group (SLWG) [3], this report is the second in the NDRDD publication series where the timeframes and inclusion criteria for NDRDD reporting are fully aligned with those of NRS's Accredited Official Statistics. The purpose of these changes is to improve understanding of these important statistics by ensuring that the PHS and NRS statistics for a specific time period refer to the same group of people.

As this report uses the same aligned methodology introduced in the previous publication, the statistics presented here are directly comparable with the preceding NDRDD report [4]. However, they are not comparable with NDRDD publications produced prior to the introduction of these changes.

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[1] **Our role in investigating deaths | COPFS**

The key features of this aligned approach are as follows:

- The figures shown in this report are based on calendar year of registration of death.
- The main commentary in this report now includes deaths by suicide involving controlled drugs (as per the NRS definition), resulting in slightly higher numbers of DRDs included in each year.
- As a consequence of the inclusion of deaths by suicide in the main commentary, the findings described in this report exclude years before 2012. This is because the NDRDD data collection definition was changed in 2012 to include deaths by suicide. Data collected prior to this change (2009, 2010 and 2011) have high levels of incompleteness and cannot be robustly compared with data from 2012 onwards. Data for 2009, 2010 and 2011 are shown in the tables accompanying this release.

Data Collection

Alongside the investigative processes commissioned by the Procurator Fiscal, Data Collection Coordinators (DCCs) within NHS Boards collate information on DRDs for internal case review and for entry into the NDRDD.

The proforma used for NDRDD data collection was designed to collect a wide range of data on people's health and social circumstances and the circumstances of their death. Information is collected from a range of sources including the Scottish Prison Service, Scottish Ambulance Service, drug treatment services, GPs and hospitals. Information is recorded using a secure online database administered by PHS.

The individual records submitted to the NDRDD were linked with information from general acute inpatient and day case admissions (SMR01), psychiatric inpatient admissions (SMR04) and Prescribing Information System (PIS) held by PHS.

Data Quality

The quality and completeness of information contained within the NDRDD report is reliant on the contribution of DCCs for the collection of information. The DCCs are in turn reliant on local partners for information to be made available.

In recent years, a number of factors resulted in higher numbers of missing or 'unknown' responses for some NDRDD proforma questions. While these areas have been discussed in previous reports, ongoing efforts between PHS and both local and national organisations have focused on improving data access, quality, and consistency, while also identifying additional data sources to enhance drug-related public health surveillance. In collaboration with DCCs, adjustments to the dataset have been made to improve the accuracy of data recording and to identify areas where access to information remains challenging.

In earlier NDRDD reports, challenges encountered collecting data during the COVID-19 pandemic meant that specific data completeness issues were highlighted within each section of the report. Recognising that this made interpretation of NDRDD figures challenging, a new approach to presenting data quality was introduced for the first time in the previous report. This revised approach is continued in this current publication with the aim of improving consistency and accessibility.

In the Excel **Data Tables** accompanying this release, missing data entries are categorised into one of two groups ('Unknown' and 'Data Excluded') described below.

'Data Excluded'

A new category ('Data Excluded') representing data quality issues that affect an entire NDRDD case record (a death) has been introduced across the time series. A number of cases across the time series have been excluded from the reporting cohort (see **Appendix 2** for further details), due to one of the following reasons:

- A death was categorised as a DRD by NRS, but was not considered to meet the NDRDD definition by DCCs at the time of data collection -

therefore no information was collected or submitted. This was particularly apparent in reporting years 2009, 2010 and 2011 (34, 28 and 36 suicides respectively) [1], as the NDRDD definition did not include deaths by suicide prior to 2012.

- A death was categorised as a DRD by NRS and no information was collected or submitted, but this was not subsequently queried by PHS. This issue (caused by an administrative error at PHS) affects a small number of DRDs in 2019 (3) and 2020 (1) only.

- An NDRDD case record was excluded from analysis (2021: 13 cases excluded; 2022: 55 cases excluded) as it did not contain valid information for the following three variables which (with the agreement of DCCs) PHS has defined as constituting meaningful core data collection for NDRDD:

    - had been receiving OST treatment (NDRDD Substitutes Proforma Question: *Type of prescribed drug?* - excluded if recorded as *NA*);

    - had contact with drug treatment services (NDRDD Contact with Services Proforma Question: *Contact with specialist drug treatment services that deliver (Tier 3 or Tier 4) drug treatment services* - excluded if recorded as *NA*); and

    - used drugs in the past (NDRDD Drug Use Proforma Question: *Known Drug User* - excluded if recorded as *Unknown*).

‘Unknown’ data

Similarly to previous publications, certain NDRDD proforma questions had higher numbers of missing or ‘Unknown’ responses recorded by DCCs. This particularly affected the completeness of data collected for reporting years 2017 to 2022 (see **Appendix 2** for further details).

In July 2023, to identify areas where accessing information was problematic and to support the development of potential solutions, amendments were made to the current dataset. The category previously described as ‘Unknown’ was updated to

also encompass a number of distinct response types (alongside missing/unknown responses), reflecting different reasons why information could not be recorded. These underlying response types include cases where no information was recorded ('No recorded evidence'), or where access to relevant records was not possible ('No access to data'). As NDRDD data are entered retrospectively, these changes affect data collected and recorded for DRDs occurring in part of 2021 and throughout 2022.

To minimise potential bias in the reporting of results, these responses may be treated differently across proforma questions (e.g. being included as a 'No' response) depending on the nature of the question and available evidence. Where responses remain categorised as ‘Unknown’, these have been excluded from the total cohort size when reporting.

The reasons contributing to ‘Unknown’ responses include the following:

- There have been an increasing number of people who have died of a DRD in Scotland and limited NHS Board and partner resource to process and record information, thereby resulting in delays and incomplete information submitted.
- Information Sharing between NHS Boards and local partner organisations may often be based on informal arrangements leading to a lack of resilience when people or systems change.
- Data collection may have been impacted by the COVID-19 pandemic, with residual effects on data access arrangements, information-sharing processes and service capacity affecting the availability of information required to complete the NDRDD data proforma.
- Changes in the scope of some data sources has meant that some information cannot be obtained.

Interpreting Data Quality in this Report

To ensure consistency in future years, NDRDD responses will be reported according to the following framework:

- Figures represented by ‘Unknowns’ and ‘Data Excluded’ will be available to view in the **Data Tables** but are excluded from the total cohort size (denominator) in all percentages (narrative and data tables).

- As alignment with the NRS definition has changed over time (NDRDD definition did not include deaths by suicide until 2012), information on some deaths was not collected. Therefore, while these data are available in the **Data Tables**, DRDs registered in 2009, 2010 and 2011 are not described in the narrative.

Further information on data quality is available in **Appendix 2**.

The National Drug-Related Deaths Database Cohort

Defining the 2021 NDRDD Cohort:

NRS reported a total of 1,330 confirmed DRDs in Scotland during 2021.

NHS Boards submitted 1,317 records that corresponded to an NRS DRD.

In 2021, 13 responses (2%) were categorised as 'Data Excluded'. These 13 cases were excluded because the data submitted did not meet the inclusion criteria based on completion of core NDRDD proforma questions.

Of the 1,317 cases discussed throughout this report, 1,250 were classified as 'non-intentional deaths' with the remaining 67 people classified as intentional deaths (i.e. deaths by suicide).

Defining the 2022 NDRDD Cohort:

NRS reported a total of 1,051 confirmed DRDs in Scotland during 2022. This was a decrease of 21% (279 deaths) compared with 2021.

NHS Boards submitted 996 records which all corresponded to an NRS DRD.

In 2022, 55 responses (5%) were categorised as 'Data Excluded'. These 55 cases were excluded because the data submitted did not meet the inclusion criteria based on completion of core NDRDD proforma questions.

Of the 996 cases discussed throughout this report, 934 were classified as 'non-intentional deaths' with the remaining 62 people classified as intentional deaths (i.e. deaths by suicide).

All further analyses and comparisons presented in this report are based on the NDRDD cohort. Further information on data quality can be seen in the **Data Tables** and **Appendix 2**.

Results and commentary

This section presents the findings from the 1,317 drug-related deaths (DRDs) in the 2022 National Drug-Related Deaths Database (NDRDD) cohort (i.e. those DRDs for which information is available), and provides discussion of trends since 2012. Comparisons between 'non-intentional' and intentional deaths are also briefly discussed. Results are organised into the following thematic subsections, each concluding with a description of key findings:

Demographic Profile: Describes the demographic and social characteristics of the NDRDD cohort.

Substance Use History: Describes the extent and duration of substance use, associated treatments and known risk factors.

Medical and Psychiatric History and Significant Life Events: A description of recent medical and psychiatric conditions (and associated hospital admissions) and experience of significant life events including domestic or sexual abuse.

Contact with Services: A description of recent contact with services to provide insights into issues faced by people in the period immediately before death.

Circumstances of Death: A description of the circumstances of deaths.

Toxicology Data: Information about the drugs present in the body at post-mortem and those thought by pathologists to have been implicated in death.

Prescribing: A description of deaths among people receiving Opioid Substitution Therapies and the prescription of other drugs among the NDRDD cohort.

Methadone Implicated Deaths: A description of deaths in which methadone was implicated, considering prescribing status and the prescription of other drugs, among the NDRDD cohort.

The data tables (**available on the publication page**) include findings from the previous annual cohorts from 2009 onwards. Data for all yearly cohorts were

analysed using the methodology described above, allowing comparisons to be made across the time series (where information was available).

Significance tests have been used to evaluate the reliability and robustness of the findings, ensuring that any conclusions are statistically valid. Further details of the specific tests used can be found in **Appendix 1.4**.

Demographic Profile

Overall trend

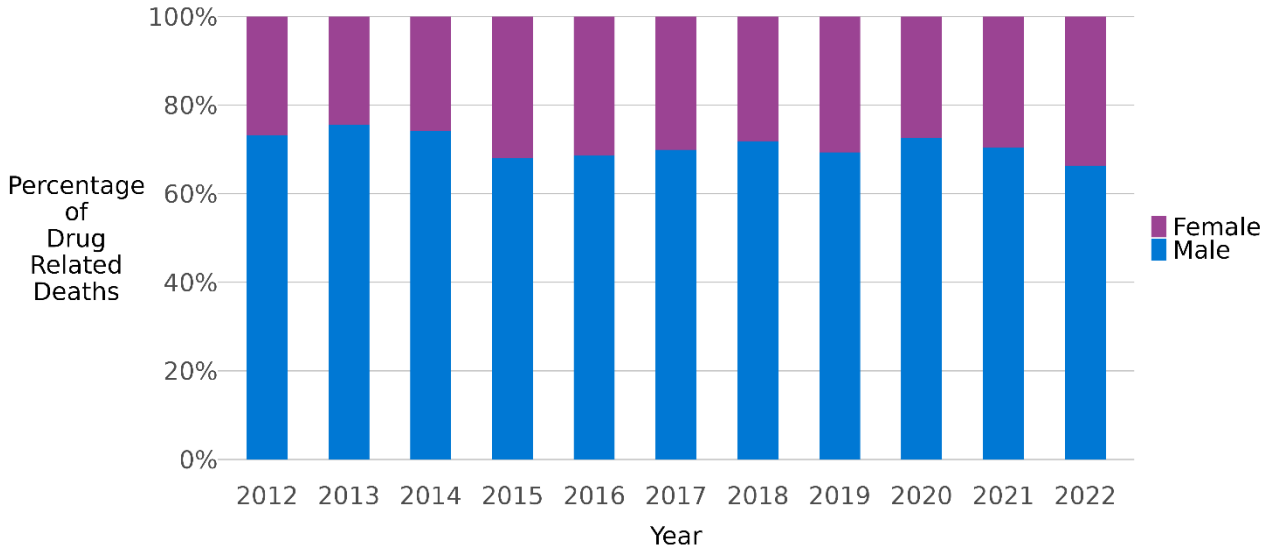
Across the time series (2012 to 2022), numbers of drug-related deaths (DRDs) increased steadily from 511 in 2012 to a peak of 1,335 in 2020. Although levels remained high in 2021 (1,317), this was followed by a substantial decrease to 996 in 2022.

Age and Sex

In 2022, two-thirds of DRDs were among males (661; 66%). Over the time series, the percentage of DRDs among females increased from 27% in 2012 to a peak of 34% in 2022 (Figure 1).

Among intentional DRDs in 2022, men (38/62, 61%) also outnumbered women (24/62, 39%). However, intentional DRDs accounted for a higher percentage of DRDs among females (24/335, 7%) than among males (38/661, 6%) in 2022 and across the reported time series (2012-2022) (data not shown in tables).

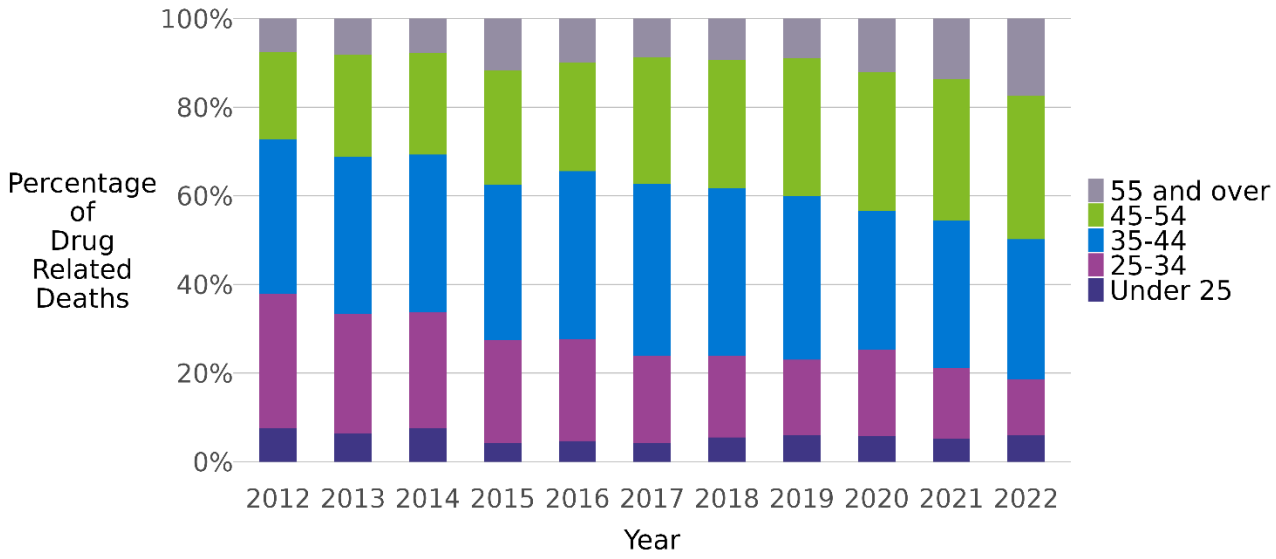
Figure 1: Percentage of Drug-Related Deaths by Sex (NDRDD: 2012-2022)



The age profile of DRDs differed between sexes, with the highest percentage of male DRDs in 2022 being among those aged 45-54 years (221; 33%), and the highest percentage of female DRDs in 2022 being among those aged 35-44 years (114; 34%). Across all DRDs, the 35-44 and 45-54 year age groups each accounted for 32% of DRDs in 2022 (Table 1 and Figure 2).

The percentage of DRDs among people aged under 35 years fell from 38% (194) in 2012 to 19% (185) in 2022. Conversely, the percentage of DRDs among people aged 35 years and over increased from 62% (317) in 2012 to 81% (811) in 2022. Of these, the percentage of DRDs among people aged 45 years and over increased from 27% (139) in 2012 to 50% (495) in 2022 (Figure 2).

Figure 2: Percentage of Drug-Related Deaths by Age Group (NDRDD: 2012-2022)



The mean age of people who had a DRD increased from 39.4 years in 2012 to 44.4 years in 2022. In 2022 the mean age of females was higher (45.1 years) than that for males (44.4 years) (Table 1).

In 2022, the mean age of intentional DRDs (49.6 years) was higher than the mean age of non-intentional DRDs (44.3 years) (data not shown in tables).

Deprivation

In 2022, over half of people who had a DRD (514, 52%) lived in the 20% most deprived neighbourhoods (Scottish Index of Multiple Deprivation (SIMD)[2] quintile 1) in Scotland, while only 3% of people (29) lived in the least deprived areas (SIMD quintile 5). The deprivation profile for DRDs has changed very little since 2012 (SIMD quintile 1: 293, 58%) (Table 2).

Living Arrangements

In 2022, where known, four out of five people who had a DRD (734, 81%) were reported to be living in their own home, 3% (30) were reported to be living in homeless or temporary accommodation, and 3% (28) either lived in a hostel, were of no fixed abode or rough sleeping prior to death (Table 3)[3]. Among people who had a DRD, the highest percentage recorded as living in homeless or temporary accommodation were in 2019 (5%; 61), 2020 (6%; 75), and 2021 (5%; 63) (Table 3).

The percentage of people living in their own home prior to death increased from 72% (366) in 2012. The percentage of people who lived in homeless or temporary accommodation increased from 1% (3) in 2012, while the percentage living either in hostels or with no fixed abode or rough sleeping decreased from 7% (33) in 2012.

In 2022, 60% of people (528) were recorded as living alone all of the time. The percentage who lived alone all of the time increased from 52% (256) in 2012. In

[2] The **Scottish Index of Multiple Deprivation**, produced by the Scottish Government, ranks small areas in Scotland by relative deprivation using indicators across income, employment, health, education, housing, access, and crime.

[3] People could have been reported as living in more than one place; therefore, totals may exceed 100%.

2022, older people were more likely to both live in their own home, and to live alone than those in younger age groups[4] (data not shown in tables).

In 2022, 15% (130) lived with a spouse or partner and 9% (78) lived with parents (Table 4). There were decreases across the reporting time period (2012-2022) in the percentages of people recorded as living with their spouse/partner, their parents, their relatives, or with friends.

In 2022, women were more likely to be living with a spouse or partner at the time of death (21%) compared to men (9%) (data not shown in tables). Differences in relationships at the time of death were also observed between intentional and non-intentional DRDs. A lower percentage of people from the intentional DRD group were single at the time of death (20/57, 35%) than in the non-intentional DRD group (454/826, 55%) (data not shown in tables).

Parenthood and Living with Children

In 2022, where known, 28% (243) of people who had a DRD were reported to be a parent or parental figure to one or more child aged under 16 (Table 5). This represents a continued decrease in the percentage reported to be a parent or parental figure over the time series. In 2022, 5% of people (39) were reported to be living in the same household as the child at the time of their death (Table 6).

In 2022, it was recorded that at least 387 children lost a parent or parental figure (Table 5). Of these 387 children, 17% (64) were reported to be living in the same household as the deceased parent or parental figure at the time of death (Table 6).

A similar percentage of people whose death was intentional (3/62, 5%) were reported to be living in the same household as a child at the time of death compared with non-intentional DRDs (36/934, 4%) (data not shown in tables).

[4] Living in own home and living alone only (Under 25: 31%, 25-34: 42%, 35-44: 44%, 45 and over: 51%).

Summary

- NRS reported the total number of DRDs decreased from 1,330 (NDRDD: 1,317) in 2021 to 1,051 (NDRDD: 996) in 2022, marking the first substantial year-on-year decrease following several years of rising figures.
- As in previous years, most DRDs registered in 2022 were among men (66%).
- The average age of people who had a DRD increased from 39 years in 2012 to 44 years in 2022.
- Over half (52%) of the people who died of DRD in 2022 lived in the 20% most deprived neighbourhoods in Scotland.
- Most people who had a DRD lived in their own home (81%). Sixty percent lived alone all of the time. The percentage of people in these categories increased since 2012.
- In 2022, 387 children were reported to have lost a parent or parental figure as a result of a DRD.

Substance Use History

Drug Use and Injecting Status Prior to Death

In the 2022 cohort, 86% (852) of people who had a DRD 'were known'[5] to have used drugs prior to death (Table 7). This figure was broadly consistent with previous years.

In 2022, and across the time series combined, the percentage of females who were known to use drugs prior to death was lower than for males (2022: 80% compared to 88%, 2012-2022: 77% compared to 88% - Table 7). Known drug use was also lower in the intentional DRD cohort (28/62, 45%) than among non-intentional DRDs (824/934, 88%) (data not shown in tables).

A key change in the DRD cohort over time has been the increasing percentage of people who were known to have used drugs over a longer period of time. Where their length of drug use was known, the percentage of people who used drugs for 20 or more years increased from 27% in 2012 (103) to 50% in 2022 (323) (Table 7). Increasing long-term drug use among the NDRDD cohort was associated with the increasing average age of people who had a DRD. Over the same period, the percentage of cases with an unknown length of drug use also increased (from 10% to 24%), which should be considered when interpreting these trends.

In 2022, 45% (361) of people who had a DRD and were known to have used drugs prior to death were also known to have injected (Table 8)[6]. Over the time series, the percentage of DRDs among people who were known to inject drugs increased from 57% in 2012 to a peak of 64% in 2014, followed by a decrease to 44% in 2021.

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[5] This information has been recorded by DCCs using evidence gathered from a variety of sources (e.g. health, social care, or other partner agencies).

[6] This includes those injecting intravenously, intramuscularly (‘muscle popping’), or subcutaneously.

Although there was considerable variation between yearly cohorts, recorded injecting was higher among females (55%) than males (53%) across the time period (2012-2022) combined (Table 8).

In 2022, recorded injecting was highest amongst the 35-44 years and 45 years and over age groups (both 57%), 33% in 25-34 year olds, and lowest in those under 25 years (28%) (Table 8).

Among people known to inject drugs (where the length of drug use was also known), the percentage who injected drugs over a period of 20 years or more increased from 17% (37) in 2012 to 46% (122) in 2022. As above, this was associated with increasing average age.

In 2022, the NDRDD cohort consisted of 144 (15%) people not known to use drugs (NK-PWUD), 491 (49%) people known to use drugs (PWUD), 161 (16%) people known to inject drugs for 10 years or less (PWID≤10) and 200 (20%) people known to inject drugs for more than 10 years (PWID>10).

Additional comparisons for these groups (NK-PWUD, PWUD, PWID≤10, PWID>10)[7] are also provided within **Medical and Psychiatric History and Significant Life Events** and **Contact with Services** sections of this report.

Drug Detoxification

Over the time series there has been a decrease in the percentage of people who had undertaken a drug detoxification in the year prior to death, from 8% (39) in 2012 to 4% in 2022 (39). Of those who had a drug detoxification in the year prior to death

[7] People who had been known to inject drugs but where length of time was recorded as unknown are assumed to have injected for less than 10 years (PWID≤10).

(and where the date was known[8]), 39% (15 people) died within one month of this treatment (Table 9).

Substitute Prescribing

In 2022, 57% of the NDRDD cohort (568 people) had been prescribed an Opioid Substitution Therapy (OST) drug at some point since 2012[9], and 93% of these (528) had received methadone at least once. This was consistent with 2021, when the same percentage, 57% (754 people), had an OST prescription, with 93% (700) prescribed methadone at least once (data not shown in tables).

In 2022, 41% of people (404) were prescribed an OST drug at the time of death. Of these, 90% (362) were prescribed methadone, with the remainder receiving oral buprenorphine (6%, 26), long-acting injectable buprenorphine (including Buvidal® slow-release formulations[10]) 3% (11) and buprenorphine and naloxone (1%, 3) (Table 10).

The percentage of the cohort prescribed an OST drug at the time of death has increased over the time series (2012: 27%). Although there was considerable variation between yearly cohorts, prescription of an OST at the time of death was similar among males (41%) and females (39%) in 2022. Across the time series, OST

[8] Data on drug detoxification (within the 12 months prior to death) were recorded as unknown in 13% of deaths in 2022.

[9] Due to issues with capturing Community Health Index numbers from prescriptions, there is a risk that the figures presented may underestimate OST prescribing since 2009. Inter-year comparisons were not included in this report due to the restricted look back period available for analysis.

[10] Long-acting injectable buprenorphine was introduced in Scotland in March 2019 and has been included in this report.

prescription was higher among females (2012-2022: 40%) than males (2012-2022: 36%) (Table 10).

In 2022, the percentage of people prescribed an OST at the time of death was higher among older age groups (35-44: 48%, over 45: 44%) than among younger age groups (under 25: 5%, 25-34: 26%). In most years (apart from 2014 and 2021) and across the entire time series combined, the percentage of people prescribed OST at the time of death was highest among people aged 35-44 years (Table 10).

For information on the dosage, supervision, and efficacy of OST prescribing, see the **OST Prescribing section**.

Previous Near Fatal Drug-related Overdoses[11]

In 2022, 50% (497) of people who died of DRD had a record of a non-fatal overdose. Of these, 15% had experienced five or more incidents over their lifetime (Table 11). Recorded overdoses were more common among females than males across the time series, and in 2022[12]. Recorded overdoses were also more common among non-intentional deaths (474/934, 51%) than intentional deaths (23/62, 37%) in 2022.

In 2022, of those who had experienced a previous overdose and the length of time since the previous overdose was known, 33% (148) had overdosed within six months of death and 19% (86) had overdosed within three months of death (Table 12).

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[11] Data related to the number of overdoses experienced were either recorded as unknown or included incomplete data in 12.1% of records in 2022. The length of time since previous overdose were recorded as unknown or data incomplete in 10.9% of records in 2022.

[12] Recorded overdoses: 2012-2022: female 54%, male 47%; 2022: female 50% male 50%.

Alcohol-Related Problems[13]

Around one quarter (23%, 227) of people who had a DRD in 2022 had received treatment for their alcohol use, been in contact with alcohol services, or had medical or psychiatric notes about alcohol-related problems recorded in the six months prior to death. The percentage of people with recent alcohol-related problems has decreased over the time series (2012: 40%, 205) (Table 13).

Across the entire DRD time series combined, the percentage of females (22%, 652) with recent alcohol-related problems recorded was lower than among males (29%, 2,029). However, in 2022, the percentage of males (24%, 158) and females (21%, 69) with recorded alcohol-related problems was similar (data not shown in tables).

In 2022, around one third (32%) of people whose death was intentional (20/62) were reported to have recent alcohol-related problems compared with 22% non-intentional DRDs (207/934) (data not shown in tables).

Summary

- In 2022, most DRDs (86%) were among people previously known to use drugs.
- Of those known to have used drugs, 74% had used them for eleven or more years and 45% were known to have injected drugs.

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[13] Inconsistencies in the recording of data relating to 'problem alcohol use' as a recent medical condition led to the formulation (since 2013) of an alternative alcohol category. People are categorised as having recent alcohol-related problems if any of the following were recorded in the six months prior to death: Alcohol-related medical condition; Alcohol-related psychiatric condition; problematic alcohol use noted in mental health history; contact with alcohol services; or treatment for alcohol dependence. As the scope of this category extends beyond medical conditions, it is not reported in the **Medical and Psychiatric Conditions Section**.

- In 2022, over one third of people who had a DRD (41%) were prescribed an OST drug (mainly methadone) at the time of death. The percentage of people who were prescribed an OST at the time of death has increased since 2012.

- In 2022, of those who had experienced a previous overdose and the length of time since the previous overdose was known, 33% (148) had overdosed within six months of death.

- In 2022, around one quarter of people who died (23%) experienced alcohol-related problems in the six months prior to death.

Medical and Psychiatric History and Significant Life Events[14]

Information from medical records (e.g. GP notes) and other data sources is recorded by NDRDD DCCs. The accuracy of these data is dependent upon access to relevant data sources and the comprehensiveness of the information they contain.

The decrease in the percentage of DRDs with a recent medical or psychiatric condition observed in 2021 (2021: 66%, 2022: 71%)[15] may be related to the challenges faced by some DCCs in collecting comprehensive medical and social care information. Therefore, findings from 2019 onwards may be less robust than in other years.

Difficulties accessing and sharing information may also be related to the unexpected decrease in DRDs where significant events were recorded, potentially also indicating that these data are not as robust as in previous years.

Recent Medical Conditions

One or more medical condition was recorded in the six months prior to death (hereafter referred to as 'recent') for 54% of people in the 2022 NDRDD cohort (512) (Table 14 and Figure 3). The percentage with a recent medical condition varied from 2012 to 2017 (ranging between 63% and 71%). Although the percentage of DRDs

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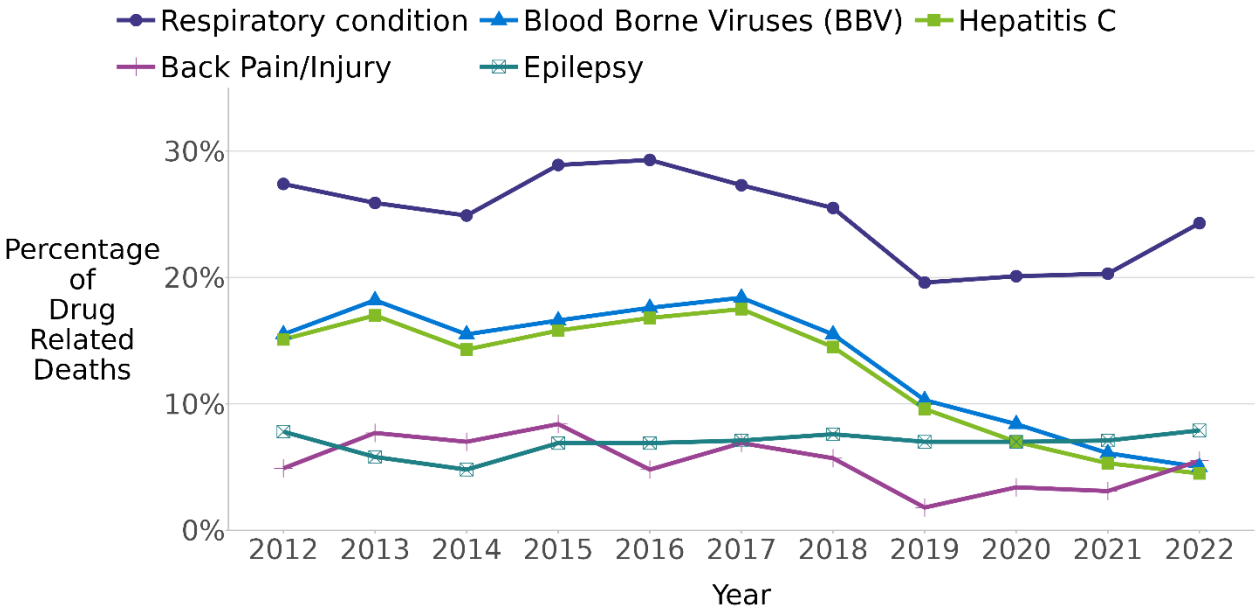
[14] People may have more than one medical or psychiatric condition recorded. For psychiatric conditions, bipolar disorder and schizophrenia are mutually exclusive diagnoses at any one time although people may have both in their lifetime, with revision over time. 'Drug addiction' and 'problem alcohol use' were removed from recorded conditions. Medical conditions wrongly recorded in the 'psychiatric conditions' variables (and vice versa) were transferred to the appropriate variables.

[15] Where information was available: includes those recorded as having no recent medical condition, blank cases are omitted from the denominator.

with a medical condition decreased between 2018 to 2021 (2018: 64% to 2021: 47%), this result should be considered with caution due to data quality issues.

Figure 3: Medical Conditions Recorded in the Six Months Prior to Death (NDRDD: 2012-2022)[1 2]



1. Medical conditions which are present in 5% or more cases in 2022 have been displayed in the chart.
2. The category 'Other' encompasses the following diagnoses: Eating Disorder; Migraine; and cases recorded as ‘Other medical condition’ (e.g. fracture, cancers).

In 2022, the most common recent medical conditions amongst people who had a DRD were:

- respiratory conditions (24%, 229);
- ‘other’ medical conditions[16] (15%, 142);

[16] The category 'Other medical conditions' includes the following diagnoses: Eating Disorder; Migraine; and cases recorded as ‘Other medical condition’ (e.g. fracture, cancers).

- epilepsy (8%, 74);
- back pain/injury (6%, 52); and
- Blood Borne Viruses[17] (BBV) (i.e. hepatitis B, hepatitis C or HIV) (5%, 47) (Table 14).

Recording of respiratory disease in the six months prior to death was relatively stable from 2012 to 2018 (ranging between 26% and 29%). In 2022, respiratory disease was recorded in 24% (229) of DRDs (Table 14). Across the time series, and in 2022, females and those aged 45 years and over were more likely than males and younger age groups to have a recent respiratory condition recorded (data not shown in tables).

The prevalence of epilepsy recorded in the six months prior to death was 7% (91) and 8% (74) in 2021 and 2022 respectively - similar to prevalence across the time period 2015 to 2022 (7% to 8%). Across the time series, reported prevalence was higher in those aged 35-44 years, but prevalence was similar across other age groups[18]. Recent recording of epilepsy was similar among females and males (7% each), but more common among people who injected drugs (2012-2022: 9%) than those not known to inject drugs (2012-2022: 6%) (data not shown in tables).

Across the time series the prevalence of recently recorded back pain or back injuries has fluctuated, ranging between 2% and 8%. In 2022, back pain and injury was recorded in 5% (52) of DRDs (Table 14). Across the time series, recent back pain or

[17] While grouped together in Figure 3, the specific BBV infections are listed separately in Table 14. Hepatitis C would be sixth most common medical condition (2022: 5%, 42) in descending order, occurring after the grouped BBV category.

[18] Across time series: Respiratory disease: under 25s: 16%, 25-34: 15%, 35-44: 20%, 45 and over: 33%. Epilepsy: under 25: 5%, 25-34: 5%, 35-44: 9%, 45 and over: 7%.

injuries were recorded less often for males (4%; females: 7%) and among those under 25 years compared to older age groups[19] (data not shown in tables).

The recording of chronic pain has been relatively stable across the time period (2012: 2%, 2022: 3%), with the exception of an increase in 2016 (11%) (Table 14). Across the time series, recent chronic pain was recorded more often for females (6%) than for males (4%) and for those aged over 45 years[20] (data not shown in tables).

Across the time series there was a decrease in the recording of recent BBV conditions (2012: 16%, 2022: 5%). Injecting drug use (specifically sharing needles, syringes or other injecting equipment) is one of the main risk factors for acquiring BBV [5]. In each year and over the time series combined, a recent BBV condition was more likely to be recorded among people who injected drugs (2012-2022: 24%) than among those not known to inject drugs (2012-2022: 3%). Across the time period, BBV conditions were equally common among females (12%) and males (12%) but were more prevalent among older people[21] (due to higher injecting prevalence among older people who died of a DRD) (data not shown in tables).

Recorded experience of recent medical conditions was similar among intentional and non-intentional deaths. In 2022, 58% (36/62) of people whose death was classed as an intentional DRD experienced a recent medical condition, compared with 51% (476/934) of people in the non-intentional DRD cohort. The prevalence of most medical conditions was similar in both cohorts.

The prevalence of a subset of six medical conditions[22] identified in the NDRDD dataset and in hospital admission records (using the International Classification of

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[19] Recent back pain or injury: Under 25: 2%, 25-34: 4%, 35-44: 5%, 45 and over: 6%.

[20] Recent chronic pain: Under 25: 1%, 25-34: 3%, 35-44: 4%, 45 and over: 6%.

[21] Recent BBV; Under 25: 2%, 25-34: 8%, 35-44: 15%, 45 and over: 13%.

[22] The six key medical conditions examined were respiratory disease, liver disease, epilepsy, cardiac problems, stomach problems and Blood Borne Viruses (Hepatitis B,

Diseases Version 10 (ICD10) diagnosis coding scheme [6]) was used to examine multiple morbidity. On average, people who had a DRD in 2022 had 0.45 (of six) medical conditions recorded in the six months prior to death - a significant decrease from 2012 (0.74) (Table 15). Recent changes in the data should be interpreted with caution due to data quality issues.

In 2022, females had a significantly higher average number of recent conditions recorded (2022: 0.52) than males (2022: 0.41). Across the time series and in 2022, older people (35-44; over 45) had a significantly higher average number of recent conditions than younger people (Under 25; 25-34) (Table 15).

Based on acute hospital admission (SMR01) records for the 10 years before death, the average number of key medical conditions associated with hospital admission for people who had a DRD in 2022 was 1.00 (Table 15), which was significantly higher than in 2012 (0.82). In 2022, females had a higher average number of recent conditions recorded (2022: 1.08) than males (2022: 0.96). The average number of medical conditions increased significantly with age[23].

In 2022, people who were known to inject drugs for 10 or more years (PWID>10) were admitted to hospital for a significantly higher average number of medical conditions (1.40) than people in groups with less severe/prolonged drug use (person not known to use drugs (NK-PWUD): 0.73; person known to use drugs (PWUD): 0.89; person known to inject drugs for less than 10 years (PWID ≤ 10): 1.09) (data not shown in tables).

Hepatitis C, HIV). These six conditions, informed by guidance from clinicians, are included as they are common long-term health issues among people who use drugs, and are consistently identified in both NDRDD records and hospital-admission data using ICD-10 codes. Together, they provide a practical way to monitor multiple morbidity in this population.

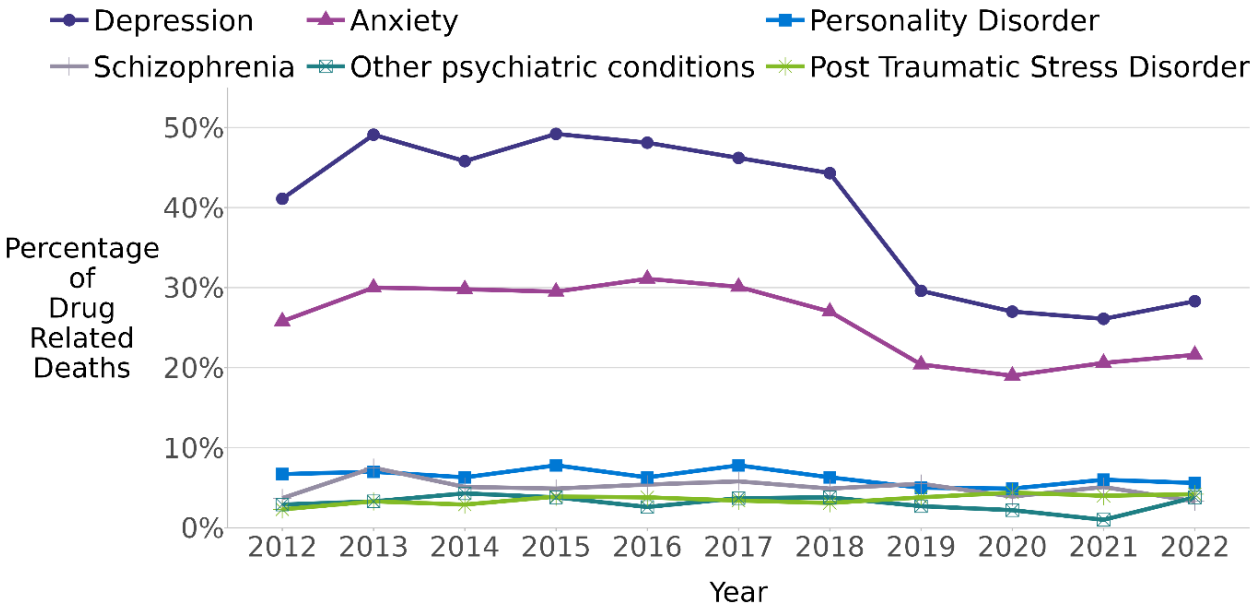
[23] Average number of medical conditions in 2020:
Under 25: 0.42, 25-34: 0.78, 35-44: 0.97, over 45: 1.15.

Recent Psychiatric Conditions

In 2022, 50% of people who had a DRD experienced a specific psychiatric condition in the six months prior to death (Table 16). This percentage steadily increased between 2012 (57%) and 2016 (66%), before decreasing from 2018 to 2022. As discussed above, this result should be considered with caution due to data quality issues.

In 2022, 30% (282) of people who died of DRD were recorded as recently suffering from depression, 23% (215) from anxiety, 6% (56) from personality disorders, and 5% (42) from post-traumatic stress disorder (Figure 4).

Figure 4: Psychiatric Conditions Recorded in the Six Months Prior to Death (NDRDD: 2012-2022)[1] [2]



1. Psychiatric conditions which are present in 3% or more cases in 2022 have been displayed in the chart.
2. The category 'Other psychiatric conditions' encompasses the following diagnoses: Self Harm; Adjustment disorder; cases recorded as "Other psychiatric condition".

Recording of depression as a recent psychiatric condition increased from 41% (210) in 2012 to 49% (340) in 2015, before decreasing to 28% (282) in 2022. Similarly, recording of anxiety as a recent psychiatric condition increased from 26% (132) in

2012 to 31% (263) in 2016, followed by an overall decrease to 22% (215) in 2022. However, as stated above, Recent changes in data should be considered with caution due to data quality issues (Table 16). Across the time series, both conditions were more prevalent among females (Depression: 48%, Anxiety: 31%) than males (Depression: 33%, Anxiety: 23%). Depression was more prevalent among older people than younger people[24]. Anxiety was most often recorded in people aged 25-34 (30%), but its prevalence was similar across the three other age groups[25] (data not shown in tables).

In 2022, where known, experience of a recent psychiatric condition was higher among intentional (39/62; 63%) than non-intentional DRDs (426/934; 46%). In particular, recording of recent depression was higher among intentional DRDs, with 47% (29/62) compared with 27% (253/934) in non-intentional DRDs, while the recording of recent anxiety was similar between the groups at 26% (16/62) and 21% (199/934), respectively.

The prevalence of a subset of seven psychiatric conditions[26] identified in the NDRDD dataset and in hospital admission records (using ICD10) was used to examine multiple psychiatric morbidity. On average, people who had a DRD in 2022 had 0.67 (of seven) psychiatric conditions recorded in the past six months, a significant decrease from 2012 (0.85) (Table 17). In 2022 and across the time period, females had a significantly higher average number of recent psychiatric conditions recorded (2022: 0.85, 2012-2022: 0.96) than males (2022: 0.58, 2012-2022: 0.62). Across the

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[24] Recent depression: Under 25: 28%, 25-34: 38%, 35-44: 40%, over 45: 38%.

[25] Recent anxiety: Under 25: 25%, 25-34: 30%, 35-44: 26%, over 45: 22%.

[26] The seven psychiatric conditions examined were depression, anxiety, personality disorder, schizophrenia, psychotic episode, post-traumatic stress disorder and bipolar disorder. These psychiatric conditions, informed by guidance from clinicians, are included as they are common mental health issues among people who use drugs. Together, they provide a practical way to assess mental health morbidity in this population.

time series, those aged 25 years and younger had a statistically lower mean number of psychiatric conditions than those aged 25-34 and 35-44 years.

In 2022, the average number of psychiatric conditions recorded by length of drug use was lower for those not known to use drugs than those who used or injected drugs (NK-PWUD: 0.5; PWUD: 0.69; PWID ≤10: 0.81; PWID>10: 0.66).

Admission to a psychiatric hospital in the 10 years prior to death was much less common than recent recording of a psychiatric diagnosis. People in the 2022 cohort had psychiatric inpatient stays in relation to an average of 0.17 of the seven conditions examined (Table 17). The mean number of psychiatric admissions associated with these conditions was relatively stable between 2012 and 2018, fluctuating between 0.19 and 0.25, but has decreased steadily since 2019, reaching the lowest levels in 2021 (0.18) and 2022 (0.17). In 2022, and across the time series combined, females who had a DRD (2022: 0.25, 2012-2022: 0.26) were admitted to hospital in relation to a higher number of psychiatric conditions than males (2022: 0.14, 2012-2022: 0.18) (Table 17). There were no statistically significant differences in the mean number of conditions associated with psychiatric admissions recorded by age group.

Across the time series, people whose death was intentional had significantly more psychiatric conditions recorded in the six months prior to death than those in the non-intentional DRD cohort (1.00 vs 0.80 respectively). In addition, the prevalence of psychiatric admissions associated with the outlined seven psychiatric conditions was also significantly higher among intentional deaths compared to non-intentional deaths (0.33 vs 0.20)

Recent Significant Events and Previous suicide attempts

In 2022, 51% (454) of people who died of DRD were recorded as experiencing a significant event in the six months prior to death (Table 18)[27]. This included 21%

[27] People may have had more than one significant event recorded.

(187) recorded as suffering ill health or a recent diagnosis (medical or psychiatric), 8% (67) with recent homelessness or housing problems, 7% (60) experiencing a bereavement, and 4% (36) recently released from prison.

In 2022, a higher percentage of people (40% of known cases (28/62)) in the intentional DRD cohort had made a previous suicide attempt compared with those in the non-intentional DRD cohort (24% (222/934)) (data not shown in tables).

Domestic and Sexual Abuse

In 2022, 17% (158) of people who had a DRD (82% of whom were female) were reported to have been a victim of domestic violence. In 2022, 6% (58) of cases listed no access to data. (Table 19).

From the information recorded about those who died in 2022 of a DRD, it was reported that 15% (138) of people had experienced sexual abuse at some point in their lives, with 64% of those being female (Table 20). Although overall prevalence has varied over time, it was highest in 2012 (18%; 90). The high percentage of 2022 cases with ‘no known incidence’ recorded (85%) may include cases where abuse was not recognised, disclosed, or recorded in available data sources. In 2022, 5% (52) of cases listed no access to data.

Summary

- In 2022, 54% of people who had a DRD had a medical condition recorded in the six months before death. Respiratory illness (24%), 'other' medical conditions (15%), and epilepsy (8%) were the most commonly recorded recent conditions.
- In 2022, 50% had a recent psychiatric condition recorded in the six months prior to death. Depression (30%) and anxiety (23%) were the most common psychiatric conditions recorded in the six months prior to death.
- In 2022, 51% of people had experienced a significant event in the six months before death (most commonly, ill health or a recent diagnosis).

- 17% of people who had a DRD had experienced domestic violence prior to death in 2022. Sexual abuse at some point prior to death was recorded in 15% of DRDs in 2022.

Contact with Services[28]

Drug Treatment Services

Additional figures for 2021 have been included in this section, as contact with treatment services during that year continued to be affected by COVID-related restrictions.

Previous contact

In 2022, where known, two thirds of people who had a DRD (66%, 661) had been in contact with a drug treatment service at some point in their lives[29]. This is similar to 2021, when 66% (864 individuals) had been in contact with drug treatment services. In the six months prior to death, 53% (523) were in contact with drug treatment services (hereafter referred to as 'recent'). In 2021, 50% (654 individuals) had recent contact with drug treatment services (Table 21).

Across the time series, both the percentage of people in contact with drug treatment services at some point (2012: 67%) and in recent contact (2012: 53%) have generally increased, reaching their peak in 2017 (73% contact at some point and 56% in recent contact). This was followed by a decrease in recent contact in 2020 (44%) and 2021 (50%). Any recorded contact with drug treatment services was also at its lowest in 2020 (63%), rising slightly to 66% in 2021. In both 2022 and across the time series combined, the percentage of people aged 25-34, 35-44 or 45 years and over who had been in contact with a drug treatment service in the six months prior to death

[28] Although the NDRDD collects information on contact within different time periods, this section emphasises contact within six months of death in order to illustrate which services might have had an impact in terms of preventing DRD.

[29] In 2022, known contact, at any time, with drug treatment services was lower among intentional (12/62; 19%) than non-intentional DRDs (649/934; 69%).

was higher than among those aged under 25 years[30]. Similar significant differences were observed between age groups in relation to contact with drug treatment services at any time prior to death (Table 21).

In 2022, the percentage of males (54%) in contact with a drug treatment service in the six months prior to death was similar to that for females (50%), similar to 2021, when recent contact was also comparable between males (51%) and females (48%). Over the time series combined (2012-2022), the differences by sex in the percentage recently in contact were not significant (Female: 51%; Male: 50%) (data not shown in tables).

In 2022, in the six months prior to their death:

- 37% (367) attended a specialist drug treatment service;
- 4% (44) had seen their GP for the purpose of drug treatment;
- 3% (26) attended needle exchange services;
- 2% (24) attended psychiatric services for drug treatment;
- 2% (24) attended hospital inpatient liaison services (Table 22).

In 2021, in the six months prior to their death:

- 31% (407) attended a specialist drug treatment service;
- 4% (49) had seen their GP for the purpose of drug treatment;
- 3% (33) attended hospital inpatient liaison services;

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[30] Contact with drug treatment service in 6 months prior to death:
Under 25: 2022: 21, 36%; 2012-2022: 153, 27%;
25-34: 2022: 63, 50%; 2012-2022: 871, 44%.
35-44: 2022: 191, 60%; 2012-2022: 2,102, 60%.
45 and over: 2022: 248, 50%; 2012-2022: 1,937, 49%.

- 2% (24) attended psychiatric services for drug treatment;
- 1% (15) attended needle exchange services (Table 22).

There was a decrease over the time series in the percentage of people who had recently consulted their GP, attended psychiatric services or A&E services. There was an increase in the percentage attending a specialist drug treatment service or that used a needle exchange[31] (Table 22).

Contact at the time of death

In 2022, 45% (450) of people who had a DRD were in contact with services in relation to their problematic drug use at the time of death, similar to 2021, when 46% (601) were in contact at time of death. People aged 35-44 or 45 years and over were more likely than younger people to have been in contact with a drug treatment service at the time of death[32] (Table 23). Across the time series up to 2021, females were consistently more likely than males to be in contact with a drug treatment service at the time of death. In 2021, 45% of males and 46% of females were in contact with services at the time of death. However, in 2022, for the first time, males (46%) were slightly more likely than females (43%).

In 2022, in cases where the date of last contact with drug treatment services was recorded, one in five (92, 20%) people who were being treated for their problematic drug use had been seen within one week of death, while 62% (277) had been seen within one month of death. In 2021, 24% (143) had been seen within one week of death, while 56% (336) had been seen within one month (data not shown in tables).

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[31] Not available for entire time period.

[32] In contact with drug treatment service at time of death:
Under 25; 2022: 8, 14%.
25-34; 2022: 52, 41%.
35-44; 2022: 168, 53%.
45 and over; 2022: 222, 45%.

Non-Drug Treatment Services

Among the 2022 cohort, 65% (642) had been in contact with services for reasons other than management of their drug use at some point in their lives. Recorded contact with services increased between 2012 (65%) and 2017 (72%). Recent changes in data should be considered with caution due to data quality issues.

In 2022, almost two-fifths of those who died of DRD (38%, 378) had contact with non-drug treatment services in the six months prior to death. This included 18% (174) in contact with mental health services and 12% (123) with social work services (Table 24). There has been a decrease in recorded recent contact with mental health services since 2012 (24%). Contact with social work services has varied over time, ranging from 9% to 16%.

In 2022, a lower percentage of those whose death was intentional (16/62, 26%) than non-intentional (362/934, 39%) had recent contact with non-drug treatment services.

Hospital Stays[33]

General Acute Hospital Stays

In 2022, 86% (852) of people who had a DRD had been discharged from an inpatient stay in a general acute hospital (hereafter, 'discharged from a general acute hospital') in the 10 years before death, and 29% (286) had been discharged within six months of death (Table 26). The percentage of people with these ‘long-term’ or ‘recent’ hospital discharges was stable over time.

[33] NDRDD data was linked to PHS’s acute (SMR01) and psychiatric (SMR04) hospital inpatient databases in order to examine the number of medical and psychiatric admissions, and time before death. Admissions to Scottish NHS hospitals in the 10 years before death were included. Information on the time between last hospital discharge (general acute or psychiatric) and death is shown in Table 25.

In 2022, those not known to have used drugs were less likely to have been discharged from a general acute hospital within 10 years death when compared to those known to have used drugs for any length of time (Long term; NK-PWUD; 79%, PWUD; 87%). Discharge within 6 months from a general acute hospital was similar between those known and not known to have used drugs (Recent; NK-PWUD; 26%, PWUD; 29%).

Across the time series combined, there were differences in acute hospital admission between groups. Females (89%) and older people (35-44; 86%, over 45; 88%) were more likely to have had a general acute hospital stay in the past 10 years than males (84%) and younger people (under 25; 75%, 25-34; 82%). Similarly, recent general acute stays were more common among females (31%), and older people (35-44; 30%, over 45; 33%) than among males (30%) and younger people (under 25; 21%, 25-34; 27%) (data not shown in tables).

Among people hospitalised in the 10 years before death, the median number of inpatient stays[34] was stable between 2012 (8) and 2022 (9). Across the time series combined, the median number of stays among females (10) and males (8) was similar. Median numbers of stays were not significantly different across age groups (under 25; 4, 25-34; 7, 35-44; 9, over 45; 10) (data not shown in tables).

Psychiatric Hospital Stays

In 2022, around one quarter (24%, 240) of people who had a DRD had been discharged from a psychiatric hospital within 10 years, with 3% (30) having been discharged in the six months before death (Table 27). Both 'long-term' and 'recent' psychiatric hospital discharge decreased since 2012 (Long term: 28%, Recent: 6%) (data not shown in tables).

[34] The median is used for psychiatric hospital inpatient stays due to the skewed distribution and the presence of outliers in the number of inpatient stays per person, which may disproportionately influence the mean.

Across the time series, females (28%) and older people (35-44; 27% and over 45; 27%) were each more likely to have had a psychiatric hospital inpatient stay in the past 10 years than their respective comparison groups (males (24%); younger people (under 25; 14%, 25-34; 24%)) (data not shown in tables). Across the time series, those not known to have used drugs were less likely to been discharged from psychiatric hospital in the past 10 years of death when compared to those known to have used drugs for any length of time (data not shown in tables)[35].

Among people hospitalised in the 10 years before death, the median number of psychiatric hospital stays observed in 2022 was two (there was no clear trend over time). Across the time series combined, a similar number of median psychiatric stays were observed among females (3) and males (2) and across all age groups[36] (2, n= 10,009) (data not shown in tables).

In 2022, the median number of psychiatric hospital stays among people hospitalised in the 10 years before death was similar between the intentional (3, n= 62) and non-intentional cohorts (2, n=934).

Criminal Justice System

Police Custody[37]

In 2022, 13% (112) of people who had a DRD had been in police custody in the six months prior to death (Table 28). There was a decrease in recorded recent police

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[35] Discharge in 10 years (2012-2022): NK-PWUD: 17%, PWID: 25%, PWID ≤ 10: 27%, PWID>10+: 30%

[36] Median number of psychiatric hospital (2012-2022): Under 25: 1, 25-34: 2, 35-44: 3, 45 and over: 3

[37] Continuing issues accessing police custody records meant that data related to the length of time between police custody release and death were recorded as unknown in 2021 (13%) and 2022 (25%).

custody since 2012 (26%) (Table 28). In 2022, recent police custody was higher for males (85: 15%) than for females (27: 9%).

In 2022, where the length of time between police custody release and death was known, 3% of DRDs (29) occurred within four weeks of a release from police custody. Further detailed information on the time between police custody and death is shown in Table 29.

Prison Custody[38]

Nearly half of the 2022 cohort (332, 44%) had ever been in prison and 6% (44) had spent time in prison in the six months prior to death (Table 30). Experience of prison custody at any time (ranging from 44% to 52%) was similar across the time series. Over time, prison custody within the six months prior to death decreased (from 13% in 2012).

Differences between groups were evident in relation to experience of prison custody. In line with the Scottish Government Prison Population Statistics [7], where males accounted for 96% and females 4% of the average daily sentenced prison population in Scotland in 2021/22, recent prison custody among DRDs was also more common among males (14%, 818) compared to females (4%, 104) across the time series. Similarly, experience of prison at any time prior to DRD was more common among males than females (2012-2022: 55% compared to 28%).

Prison custody in the six months prior to death differed between age groups[39], those aged 25-34 (21%) were most likely to have experienced recent prison stays. The age cohorts most likely to have ever experienced prison custody were 25-34 (52%) and

[38] Data related to the length of time between prison release and death were recorded as unknown in 2021 (13%) and 2022 (27%).

[39] Recent prison experience (2012-2022) by age:
Under 25: 16%, 25-34: 21%, 35-44: 12%, 45 and over: 4%

35-44 year olds (53%) compared to both younger and older age groups (Under 25; 30%, 45 and over; 43%) (data not shown in tables).

Recent prison custody was highest among people who injected drugs for less than 10 years (PWID ≤ 10: 16%, compared to NK-PWUD: 3%, PWUD:10 %, PWID>10: 13%) (data not shown in tables). People who were known to inject drugs for 10 or more years were more likely to have ever been in prison (PWID>10) (68%) than people with less severe/prolonged drug use[40] (data not shown in tables).

Further information on the time between prison custody and death is shown in Table 31. Information on the number and percentage of opioid-related deaths occurring within four or 12 weeks of release from prison custody (based on NRS's Accredited Official Statistics) is also provided in PHS's **National Naloxone Monitoring Report** [8]. The percentage of opioid-related deaths that occurred within four weeks of prison release reached their lowest levels since monitoring commenced (1.6% in 2022)[41].

Contact with Services Providing Specialist Drug Interventions

While drug treatment episodes and hospital admissions may directly address people's substance use, specialist interventions are also provided in prison and police custody. Non-drug treatment services also provide opportunities to detect/address problematic drug use, promote overdose awareness and deliver harm reduction interventions (e.g. providing Take Home Naloxone). This section reflects this range of potential preventative interventions, describing contact with any of those services in the six months before death.

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[40] Ever been in prison (2012-2022)
NK-PWUD: 12%, PWUD: 40%, PWID ≤ 10: 60%, PWID>10: 68%

[41] Since the introduction of the **National Mission and additional funding**, a range of new initiatives have been implemented including the prison to rehabilitation pathway, improved transition processes from prison to the community, arrest referrals, and the provision of Take Home Naloxone on release.

In 2022, 65% (649) of people who had a DRD had been in drug treatment, in prison or police custody or discharged from hospital in the six months prior to their death. The percentage of people in contact with these services in the six months prior to death varied over the time series ranging from 65% to 76% (Table 32). However, some of these observations should be considered with caution due to potential data quality issues.

In 2022, almost three quarters (73%) of people who had an opioid-related death were in contact with these services in the six months prior to death (Table 32). As above, this observation should also be considered with caution due to data quality issues.

Summary

- In 2022, two thirds of people who had a DRD (66%) were in contact with a drug treatment service at some point in their lives.
- In the six months prior to death, over half 53% were in contact with drug treatment services. This is a slight increase from 2021 when 50% had recent contact with drug treatment services.
- In 2022, 20% of people who were being treated for their problematic drug use had been seen within one week of death, while 62% (277) had been seen within one month of death.
- In 2022, 38% of people who died were in recent contact with non-drug treatment services (e.g. social work, housing). Mental health services contact among DRDs increased over time from 2012 to 2022.
- In 2022, 29% of people who had a DRD had been discharged from an inpatient stay in a general acute hospital and 3% had been discharged from a psychiatric hospital in the six months prior to death.
- In 2022, 13% of people who had a DRD had been in police custody in the six months prior to death.

- Six per cent of people who had a DRD had been in prison custody in the six months prior to death.
- In 2022, 65% of people (73% of those whose death was opioid-related) were in contact with a service with the potential to address their problematic drug use or deliver harm reduction interventions in the six months before death.

Circumstances of Death

Time[42]

Information on the distribution of Drug-Related Deaths (DRDs) by day and month is available in Tables 33 and 34. In 2022, the highest percentage of deaths occurred on a Thursday (16%) and in November (10%). Across the time period however, differences were not significant - neither the day of death nor the month of death were unequally distributed.

Place of Drug Use and Place of Death

In 2022, 76% (674) of people who had a DRD consumed the drugs present at death in their own home (Table 37).

Of the people who had a DRD in 2022, 68% (657) died in their own home and 16% (157) died in another person's home. Six per cent of people (60) died in hospital and 3% of people were recorded to have died in a hotel or temporary accommodation (Table 38). The percentage of people who died in a hotel or temporary accommodations has increased over time (2012: 1.2%), while the percentage of people who died in hospital has decreased over time (2012: 11%).

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[42] The number of DRDs by NHS Board for the NDRDD cohort are shown in Table 36 of the **Data Tables**. The crude mortality rates of DRDs by NHS Board are not discussed within this NDRDD report due to potential for misinterpretation / misleading results, as cases are either missing or have been excluded from the cohort for various reasons (see **Methods** section for further information). NRS provides rates per head of population and rates per estimated number of 'problem drug users' for Scotland and selected NHS Boards in their Accredited Official Statistics [1,2].

Scene of Overdose

Where known, another person was present at the scene of the fatal overdose in 46% (355) of DRDs in 2022. The percentage of DRDs where another person was present was roughly stable at between 50% to 56% over the time series since 2012 (53%, 258) (Table 39). In 2022, presence of another person in the same room was recorded in 18% (136) of DRDs (Table 40).

Across the time series, presence of another person at the scene of fatal overdose was much lower at DRDs among people who lived alone all of the time (29%) than among people who did not (67%)[43]. Similarly, across the time period (2012-2022) presence of another person at the scene of a fatal overdose was less likely where the person was living in their own home (43%) than where they were not (56%) (data not shown in tables).

As discussed in the **Living Arrangements** Section, the percentage of people living in their own home and living alone all of the time increases alongside age group. Age group was also related to the percentage of fatal overdoses which were witnessed by another person (2022: 66% among people aged under 25, 48% for 25-34 year olds, 53% for 35-44 year olds, and 38% of those aged 45 and over) (Table 39). The changes in living circumstances which accompany ageing in this population appear to be associated with a decreased likelihood of effective intervention in the event of a drug poisoning or overdose.

In 2022 and across the time series, women had a higher percentage of fatal overdoses witnessed by another person (2022: 60%, 2012-2022: 59%) than males (2022: 40%, 2012-2022: 49%) (Table 39). Again, referring to the **Living Arrangements** Section, women were more likely to be living with a partner/spouse (25%) compared to men (13%) (across the time period (2012-2022) combined). It was in this group specifically where the highest percentages of overdoses were

[43] The presence of another person at the scene of the fatal overdose does not necessarily indicate that the individual was present throughout the relevant period, witnessed the overdose, or was able to intervene or provide assistance.

witnessed - based on data from across the time series, women who were living with a partner/spouse were more likely to have someone present at the scene of a fatal overdose than those without a spouse[44] (data not shown in tables).

In 2022, an ambulance attended the scene of 81% (783) of DRDs - this figure was broadly consistent with previous years (Table 41). Among the 181 (19%) cases where an ambulance did not attend, there were 82 deaths (9%) where an ambulance was not required as the person was beyond medical intervention (Table 41). Where known, an attempt was made to resuscitate the individual in 36% (314) of cases - again, this figure was consistent over the time series (Table 42). In 53% (168) of these cases, resuscitation was attempted by ambulance staff (Table 43)[45].

Naloxone Availability and Use[46]

Naloxone is a medication which is used to reverse the effects of an overdose with opioids, such as heroin [8]. As well as being used by ambulance staff, following a

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[44] Person presents at scene of death in those living with spouse (2012-2022):
Male: 75%, Female: 79%
Person presents at scene of death in those living without spouse (2012-2022):
Male: 40%, Female: 43%.

[45] Multiple people (in differing roles) may have attempted to resuscitate the same individual.

[46] In 2010, questions were added to the NDRDD form to collect data on the availability of ‘take-home’ naloxone. However, an examination of 2010 and 2011 NDRDD data suggested that these questions were not solely measuring ‘take-home’ naloxone (as had been intended) but administration by a range of people including relatives, paramedics and hospital staff. The naloxone questions in the 2012 proforma were refined to specify administration of ‘take home’ naloxone provided directly to people at risk of an opioid overdose. Due to this change, naloxone availability and use from 2012 is not comparable to previous years.

short overdose training session, naloxone can also be supplied to and administered by members of the public. Take-home naloxone (THN) is supplied nationally by the **National Naloxone Programme**.

In 2022, opioids (methadone, heroin/morphine or buprenorphine) were implicated in 712 of the 996 DRDs with known toxicology (77%). Of these cases, THN was reported to be available at the scene of 47 deaths (13%) and was administered on 26 occasions (61% of cases where available) (Table 44).

Previous THN supply was known in 85% (847) of cases in the 2022 cohort. Where known, 33% (279) of the 2022 cohort had been supplied with THN before death (Table 45). Known THN supply before death increased over time among the cohort (rising from 3% in 2012).

For 2022 deaths among people who had been supplied with THN, availability was known in 17% (47) of cases. Of these, naloxone was available at the scene of overdose in 64% (30) of 2022 DRDs (Table 45). Where supplied and available, THN was used in 53% (16/30) of deaths (data not shown in tables). In 2022, where naloxone was available but not used, apart from in six deaths, either no other persons were present at the scene of overdose, or they were not in the same room (data not shown in tables).

Summary

- In 2022, 76% of people who died of DRD consumed the drugs in their own home and 68% died in their own home.
- Under half of DRDs (46%) occurred when others were present at the scene of the overdose. In 2022, the percentage of deaths where others were present at the scene of overdose (and potentially able to intervene) was lower where people lived alone all of the time (29%) or were aged 45 or over (38%).
- Where known, take-home naloxone (THN) supply has increased over time (33% of 2022 DRDs). Among people who had previously been supplied with THN, 64% had naloxone available at the scene of death.

Toxicology Data

Information on the presence of drugs tested at post-mortem is collected as part of the NDRDD dataset. PHS also receives pathology information from National Records of Scotland (NRS) about whether substances were (i) implicated in the death and (ii) not implicated in the death.

The determination as to whether substances were implicated in, or potentially contributed to, death is complex and lies with the pathologist who will consider toxicology data in combination with pathological and circumstantial evidence before reaching their conclusion. The relationship between presence and implication is not straightforward. Some drugs are more potent than others and there is significant risk to life even at so-called 'therapeutic' levels, particularly when ingested with other drugs or alcohol. Conversely, other drugs are considered to pose less risk to life, even when an excess of the drug is ingested. See **Appendix 1** for further information about these data.

Drugs Present at Time of Death[47]

NDRDD toxicology results showing the drugs present in the body at the time of death (but not necessarily contributing to the death) indicated that the majority of DRDs (83%, 827) had multiple drugs present at the time of death. This was similar to previous cohorts (Table 46).

In 2022, methadone was the drug most commonly found at post-mortem (49%, 491) (see **Prescribing Section** for more information on presence of methadone in those prescribed OST). Methadone presence varied considerably over the time series

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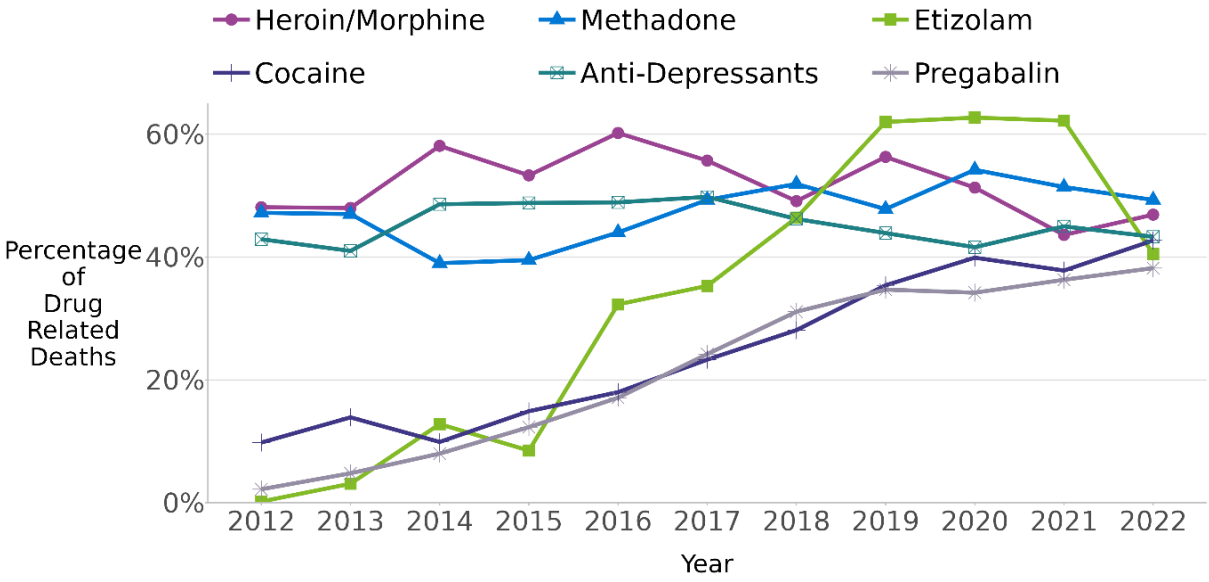
[47] During 2020, forensic toxicology laboratories in Scotland made the decision to exclude cannabis from their routine post-mortem screening process. This was because cannabinoids are highly unlikely to be implicated in DRDs. The impact of this change is that figures for cannabis presence/implication for 2020 and beyond cannot be compared with figures for years up to and including 2019.

(ranging between 39% and 54%). Heroin/Morphine was the second most commonly found drug (47%, 467) and has been present in a relatively consistent percentage of deaths over time (Table 46 and Figure 5). In 2022, anti-depressants were found at post-mortem in 43% of DRDs. Cocaine presence increased from 2012 (10%) to 2022 (43%) (Table 46 and Figure 5).

In 2022, the next most common drugs found present at post-mortem were etizolam (41%, 403) and pregabalin (38%, 380). The presence of pregabalin increased steadily over the time series, rising from 2% in 2012. The percentage of deaths with etizolam present also rose sharply over time, increasing from less than 1% in 2012 to around 62% between 2019 and 2021 before decreasing in 2022 (Table 46 and Figure 5). Changes in the illicit market for novel benzodiazepine-type substances (hereafter called 'street benzos') such as etizolam are explored further in the **'Street Benzos'** section.

Figure 5: Most Common Drugs Present at Post-mortem (NDRDD: 2012-2022)



Other drugs commonly found present at post-mortem in 2022 were alcohol (47%, 465), diazepam (34%, 347), codeine[48] (23%, 313) and gabapentin (15%, 151). The presence of alcohol at post-mortem varied between 2012 and 2016 then decreased in recent years; however, alcohol increased to 47% in 2022. The percentage of DRDs with codeine present increased over the time series (2012: 15%), peaking in 2019 (31%) before reducing slightly to 2022 (25%).

Between 2012 and 2015, diazepam was the drug most commonly found present at post-mortem in each NDRDD yearly cohort. In 2016, diazepam presence decreased significantly to 45% and has continued to decrease, reaching 35% in 2022. Diazepam was the seventh most common drug found present at post-mortem in 2022

Several other drugs were regularly found in post-mortem toxicology data. Post-mortem prevalence of alprazolam (a benzodiazepine also known by the brand name Xanax®) was 6% in 2022, significantly lower than in 2018 (14%). Gabapentin has varied in prevalence over the time series increasing between 2012 (12%) and 2017 (25%) before decreasing again in 2022 (15%). The percentage of DRDs with buprenorphine present generally increased over the time series (2012: 2% and 2022 8%). Strong opioids such as dihydrocodeine (12%, 123), oxycodone (2%, 23) varied in presence over the time series while fentanyl (1%, 11) had similar prevalence over the time series (2012-2022).

[48] It is important to note that codeine may be present in post-mortem toxicology as a result of acetylcodeine being a naturally occurring impurity in illicit heroin rather than because of use as a prescribed or ‘over the counter’ medication.

Drug presence by sex

Drugs present at post-mortem by sex in 2022 are described below and shown in Table 47.

For females:

- Anti-depressants (53%, 176) were the substance most commonly found at post-mortem, followed by methadone (48%, 160) and heroin/morphine (46%, 155).
- The presence of anti-depressants (53%), gabapentin (21%), paracetamol (20%) and anti-psychotics (15%) was higher among females than males.

For males:

- Methadone (50%, 331), heroin/morphine (47%, 312), cocaine (43%, 287), and etizolam (42%, 279) were the substances most commonly found present at post-mortem.

Drug presence by age

Drugs present at post-mortem by age group in 2022 are described below and shown in Table 48.

Among people aged under 25 years:

- Cocaine (56%, 33), anti-depressants (32%, 19) and heroin/morphine (31%, 18) were the substances most commonly found at post-mortem. Three quarters (75%) of DRDs in this age group were found to have multiple drugs present at post-mortem.
- The presence of methadone (19%) was lower than in any other age group.

In people aged 25-34:

- Cocaine (56%, 70), etizolam (50%, 63) and heroin/morphine (45%, 57) were the substances most commonly found present at post-mortem.

In people aged 35-44:

- Methadone (56%, 176), cocaine (50%, 156) and heroin/morphine (49%, 153) were the substances most commonly found present at post-mortem.

In people aged 45 and over:

- Methadone (51%, 255), heroin/morphine (48%, 239), and anti-depressants (44%, 219) were the substances most commonly found present at post-mortem.

- The presence of cocaine (34%) was lower than in any other age group.

In 2022, methadone presence was higher in the two older age groups (35-44 and 45 and over) than in the younger two groups.

Drug presence by type of DRD

In 2022, among people whose death was intentional, the drugs most commonly found present at post-mortem were: anti-depressants (36/62, 58%), alcohol (28/62, 45%), heroin/morphine (24/62, 38%), diazepam (18/62, 29%), pregabalin and paracetamol (both 16/62, 26%) (data not shown in tables).

Drugs found present in a higher percentage of intentional DRDs compared with non-intentional DRDs were paracetamol (26% and 14%), anti-depressants (58% and 42%) and tramadol (19% and 6%).

Drugs found present at post-mortem in a lower percentage of intentional DRDs than non-intentional DRDs were etizolam (5% and 43%), methadone (8% and 52%), pregabalin (26% and 39%) and cocaine (21% and 44%) (data not shown in tables).

A lower percentage of people whose death was intentional had multiple drugs present at the time of death (66% compared to 84%) (data not shown in tables).

Combinations of Drugs Present at Time of Death

In 2022, the combination of opioids (heroin/morphine, methadone or buprenorphine) and benzodiazepines (e.g. diazepam, etizolam) was most commonly found in drugs detected at post-mortem (63%, 625), followed by opioids and gabapentin or pregabalin (gabapentinoids: 41%, 407) (Table 49). Other commonly recorded combinations included benzodiazepines and alcohol (34%), opioids and cocaine (34%), cocaine and benzodiazepines (33%), cocaine and alcohol (22%), and cocaine and gabapentinoids (20%) (Table 49).

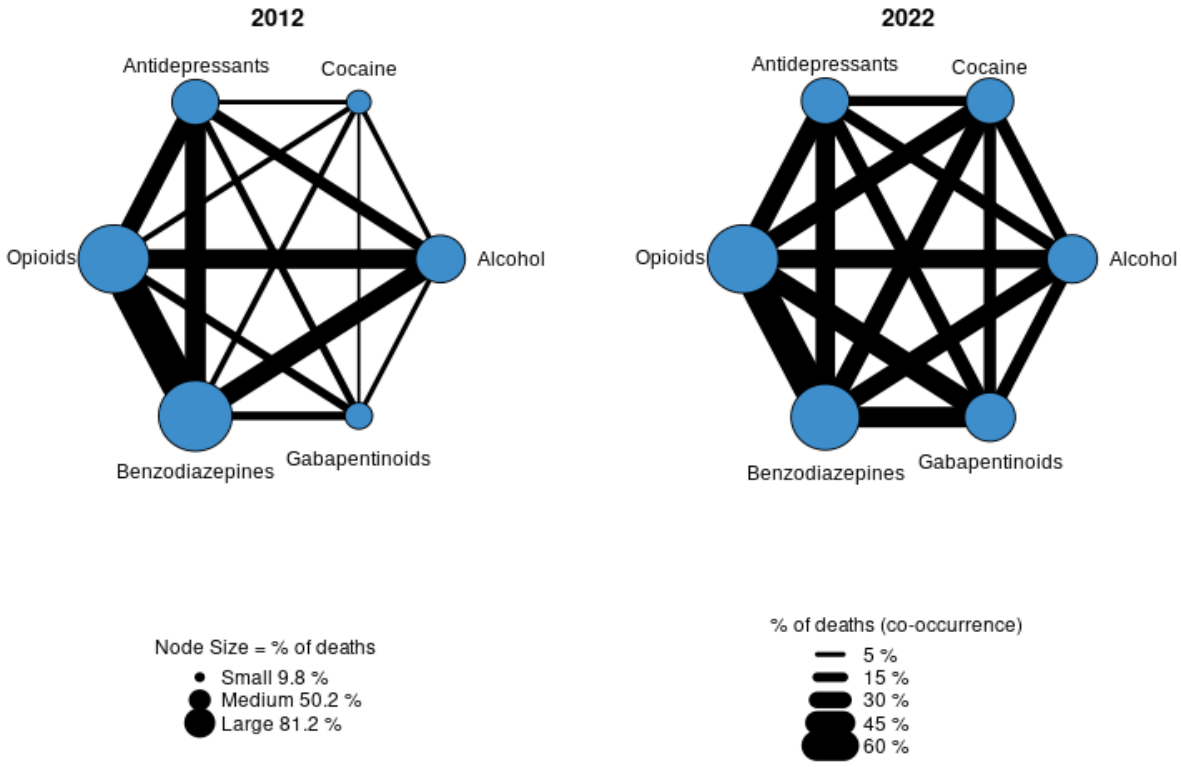
Since 2012, the prevalence of opioids and benzodiazepines has decreased (77% in 2012), and opioids with gabapentinoids has increased (0% in 2012). All combinations of cocaine showed increases over the time series, including opioids and cocaine (11% in 2012), cocaine and benzodiazepines (10% in 2012), cocaine and alcohol (8% in 2012) and cocaine with gabapentinoids (0% in 2012).

Figure 6 presents a node and line diagram for 2012 and 2022 showing the presence of selected drugs in drug-related deaths and the extent to which they were found in combination.

Each node represents a drug. The size of the node reflects the percentage of deaths in that year in which the drug was present; larger nodes indicate a higher percentage of deaths. The lines between nodes represent cases where two drugs were found in combination. Thicker lines indicate a greater percentage of deaths involving the presence of that specific drug combination.

Between 2012 and 2022, the lines between nodes become more densely connected, indicating an increase in polydrug use. In 2012, opioids and benzodiazepines form the most prominent nodes, with strong connections between these drugs, along with alcohol and antidepressants. By 2022, several drugs, including opioids, benzodiazepines, cocaine and antidepressants, account for a substantial percentage of deaths, and the connections between them are thicker, indicating increased prevalence.

Figure 6: Percentage of DRDs with presence of selected drugs detected at post-mortem and Co-Occurrence Patterns (NDRDD/NRS: 2012-2022)



In 2022, examining combinations of drugs present by sex, the combination of opioids and gabapentinoids was more likely to be observed among females than males (Males: 38%, 254; Females: 46%, 153) (data not shown in tables).

Drug combinations involving opioids and benzodiazepines were more likely to be observed among the older age cohorts (25-34, 35-44 and 45+) than among younger people (under 25)[49] (data not shown in tables). The combination of cocaine and gabapentinoids was also more likely to be observed among older age cohorts (25-34,

[49] Opioids and benzodiazepines (under 25: 25, 42%; 25-34: 78, 62%; 35-44: 218, 69%; 45+: 304, 61%)

35-44 and 45+) than among young people (under 25)[50] (data not shown in tables). Similarly, combinations of opioids with gabapentinoids detected at post-mortem were also more frequent in older age cohorts than in individuals under 25 (data not shown in tables)[51]. Benzodiazepines with alcohol were common across all age groups[52](data not shown in tables).

Drugs Implicated in Death

Additional information on drugs implicated in, or potentially contributing to, death was supplied by NRS and available for all NDRDD DRDs (996) in 2022.

Multiple drugs were implicated in 83% (827) of DRDs. Multiple drug implication has increased over time from 66% (338) in 2012. (Table 50).

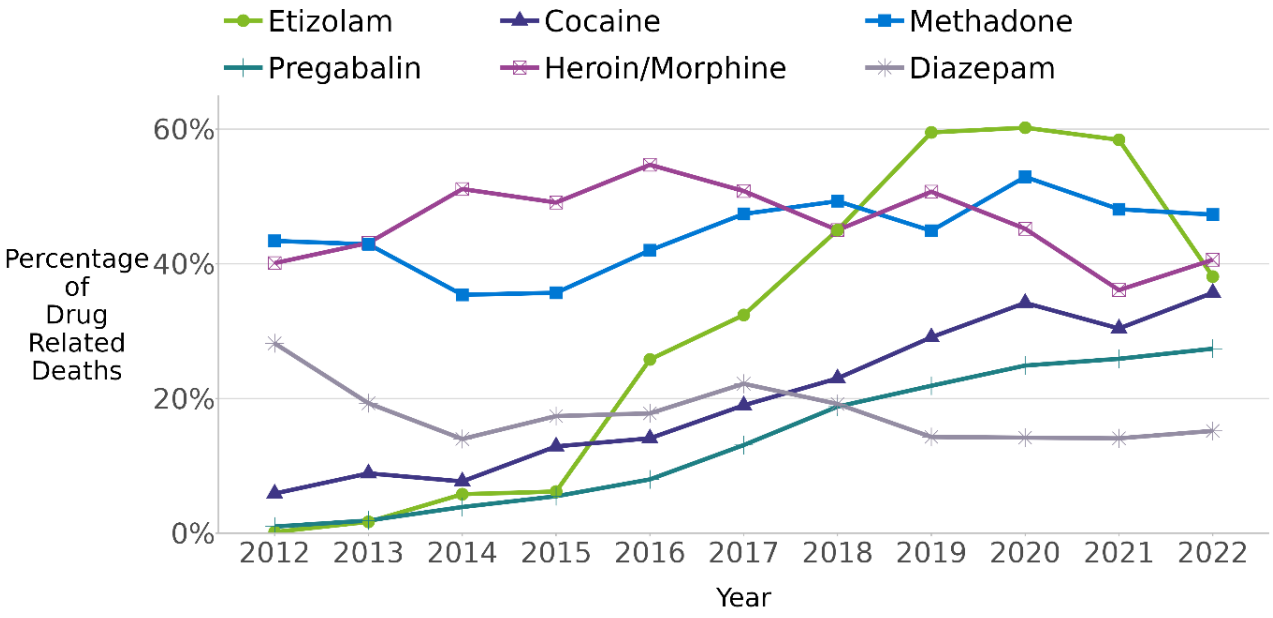
In 2022, opioids (methadone, heroin, morphine or buprenorphine) were implicated in 712 DRDs (72%). Opioids have been implicated in at least 70% of DRDs in each year since 2012 (Table 50).

[50] Cocaine and gabapentinoids (under 25: 4, 7%; 25-34: 32, 25%; 35-44: 77, 24%; 45+: 83, 17%)

[51] Opioids with gabapentinoids (under 25: 8, 14%; 25-34: 41, 33%; 35-44: 152, 48%; 45+: 206, 42%)

[52] Benzodiazepines with alcohol (under 25: 15, 25%; 25-34: 48, 38%; 35-44: 122, 39%; 45+: 156, 31%)

Figure 7: Most Common Drugs Implicated in Death (NDRDD/NRS: 2012-2022)



In 2022, methadone was the drug most frequently implicated in deaths (47%, 471). The next most commonly implicated drugs were heroin/morphine (41%, 404), etizolam (38%, 379), cocaine (36%, 356), pregabalin (27%, 273) and diazepam (15%, 151) (Table 50 and Figure 7).

The main changes in drug implication over the time series have been:

- An increase and subsequent decrease in the implication of 'street' benzodiazepines. Etizolam implication rose sharply from less than 1% of DRDs in 2012 to 6% in 2015, then to over half (60%) in 2020, before decreasing to 38% in 2022. The implication in death of other **street benzos** such as diclazepam (11% in 2016, <1% in 2022) decreased over the time series[53].

[53] More recent data can be accessed at **Public Health Scotland, RADAR: New Benzodiazepines in Scotland**

- The percentage of DRDs where prescribable benzodiazepines (including diazepam) were implicated has generally decreased over time from 2012 (28%) to 2022 (15%).

- Heroin/morphine implication varied over the time series, ranging between 40% and 55% each year. In 2022, 41% of DRDs had heroin/morphine implicated.

- The number of DRDs where cocaine was implicated has increased across the time series, with 2022 having the highest percentage of cocaine implicated deaths recorded (36%).

- There were gradual increases in gabapentinoid implication over time. Gabapentinoids (gabapentin and pregabalin) are prescription drugs used to treat epilepsy and chronic pain. However, there is a significant illicit market for these controlled drugs, which are known to 'potentiate' or enhance the effects of opioids [15]. In 2022, gabapentinoids were implicated in 360 deaths (36% of cases). Opioids (heroin/morphine, methadone or buprenorphine) were also implicated in 84% (301) of these deaths (data not shown in tables).

- Alcohol implication in DRDs decreased over the time series from 18% in 2012 to 11% in 2022.

Drug implication by sex

Drugs implicated in 2022 DRDs by sex are described below and shown in Table 51.

For females:

- Methadone (46%, 154), heroin/morphine (37%, 124) and etizolam (34%, 115) were most commonly implicated in DRDs.

- Gabapentin (18%), dihydrocodeine (11%), anti-depressants (12%) and tramadol (8%) implication were all higher among female DRDs compared to male DRDs.

For males:

- Methadone (48%, 317) was most commonly implicated in death, followed by heroin/morphine (42%, 280) and etizolam (40%, 264).

Drug implication by age

Drugs implicated in 2022 DRDs by age group are described below and shown in Table 52. The most commonly implicated substances differed between age groups.

Among people aged under 25 years:

- Cocaine (49%), heroin/morphine (25%), and etizolam (24%) were the most commonly implicated substances.
- Methadone implication (17%) was lower in persons aged under 25 compared to other age groups.

For those aged between 25 and 34 years:

- Etizolam (46%), cocaine (44%) and methadone (37%) were the most commonly implicated substances.

For those aged between 35 and 44 years:

- Methadone (53%), heroin/morphine (43%), and cocaine (42%) were the most commonly implicated substances.

Among people aged 45 years and over:

- Methadone (50%), heroin/morphine (43%) and etizolam (36%) were the most commonly implicated substances.
- Cocaine (28%) implication was lowest in persons aged 45 and over compared to other age groups.

Single drug deaths

Across the time series, multiple drugs were implicated in a large number of DRDs (2012–2022: 82%). The percentage of DRDs with multiple drugs implicated has increased over time from 66% (338) in 2012 to 83% (827) in 2022 (Table 50). In 2022, among deaths where only a single drug was implicated, cocaine was the most commonly found substance (21%; 34/160), followed by heroin/morphine (17%; 27/160), and methadone (13%; 20/160).

While the percentage of single drug implication cases attributed to heroin/morphine and methadone has remained relatively consistent over time, the number and percentage of cocaine-only deaths increased from 3% (4/158) in 2012 to 21% (34/160) in 2022 (data not shown in tables).

In 2022, the characteristics of people for whom cocaine was the only drug implicated in death differed from those where other substances were implicated alongside cocaine. While the sex distribution was similar in both groups, mean age (37 years compared to 42 years) and recent contact with drug treatment services (29% (10/34) compared to 56% (179/322)) were both lower among cocaine-only deaths.

Drug implication by type of DRD

Among people whose death was intentional, the drugs most frequently implicated in death were: heroin/morphine (17/62, 27%); anti-depressants (16/62, 21%); other drugs and pregabalin (both 11/62, 18%); and, cocaine and tramadol (both 10/62, 16%).

Different patterns of drug implication were observed between these groups.

- Drugs which were implicated in a higher percentage of intentional DRDs than non-intentional DRDs were anti-depressants (26% and 8%), codeine (13% and 4%), and tramadol (16% and 5%).
- Drugs which were implicated in a lower percentage of intentional DRDs than non-intentional DRDs were etizolam (4% and 40%), methadone (8%

and 50%), heroin/morphine (27% and 41%), and cocaine (16% and 37%) (data not shown in tables).

Relative drug implication[54]

Among drugs more commonly implicated in DRDs, methadone was implicated in 96% (471/491) of DRDs where present, followed by etizolam (94%: 379/403) and heroin/morphine (87%: 404/467). Despite only being present in a small number of cases in 2022, alprazolam (6%, 61) was implicated in over 80% of DRDs where found present at post-mortem (Table 53).

In contrast, although alcohol and anti-depressants were among the drugs most commonly found at post-mortem, they were implicated in less than half of deaths where present (alcohol; 23% (109/465); anti-depressants: 22% (88/431)).

'Street' Benzodiazepines[55]

The Psychoactive Substances Act [9] came into force across the United Kingdom in May 2016, prohibiting the production, sale and supply of psychoactive[56] substances (other than those specifically exempted by the Act). This legislation was a direct response to increasing diversity within global drug markets and challenges in

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[54] Relative drug implicated is calculated by taking the number of cases in which a drug was implicated and dividing by the number of cases in which the same drug was present in toxicology. Both drugs present and drugs implicated information was recorded for 996 people in 2022.

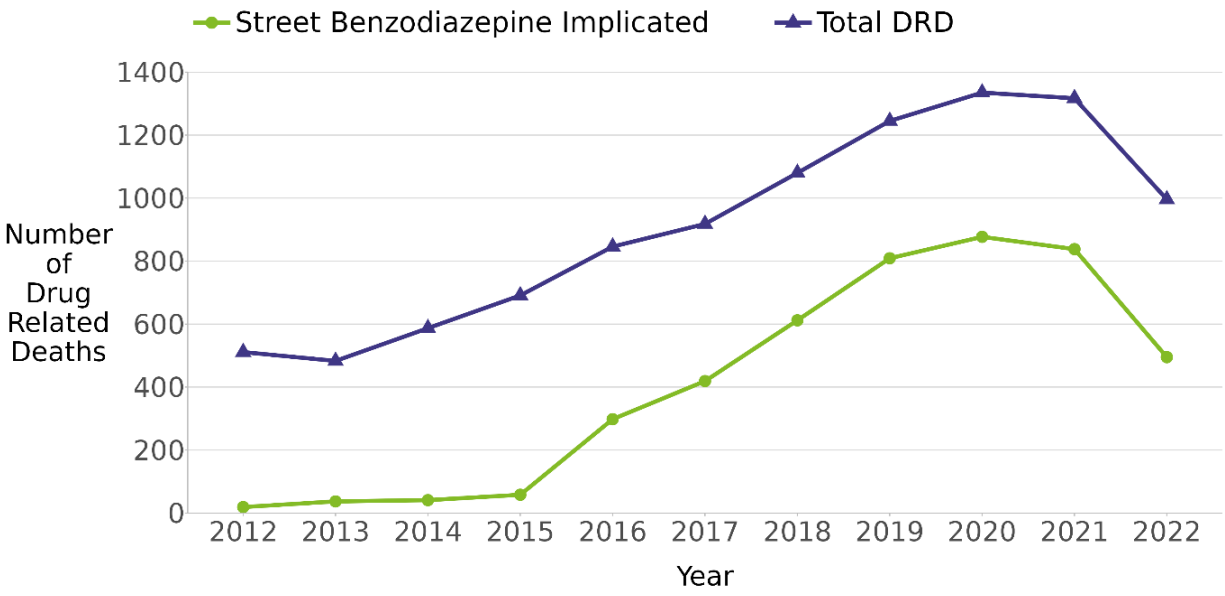
[55] 'Street' benzodiazepines include alprazolam, bromazolam, clonazolam, desalkylgiadazepam, diclazepam, etizolam, flubromazepam, flualprazolam, phenazepam, and pyrazolam.

[56] Defined by the Act [10] as anything which ‘by stimulating or depressing the person’s central nervous system...affects the person’s mental functioning or emotional state’.

restricting the availability of ‘Novel’ Psychoactive Substances (NPS)[57] via the Misuse of Drugs Act 1971 [10].

Over the time series, the presence and implication of ‘street’ benzodiazepines increased between 2012 and 2021, followed by a sharp decrease in 2022 (Figure 8). Among the 528 DRDs in 2022 where 'street' benzodiazepines were present at post-mortem, 94% (495) had these benzodiazepines implicated. Across the entire time period in 91% (4,503) of cases where a 'street' benzodiazepine was present a 'street' benzodiazepine was also implicated in the cause of death.

Figure 8: Number of drug related deaths with 'Street' Benzodiazepines Implicated (NDRDD/NRS: 2012-2022)

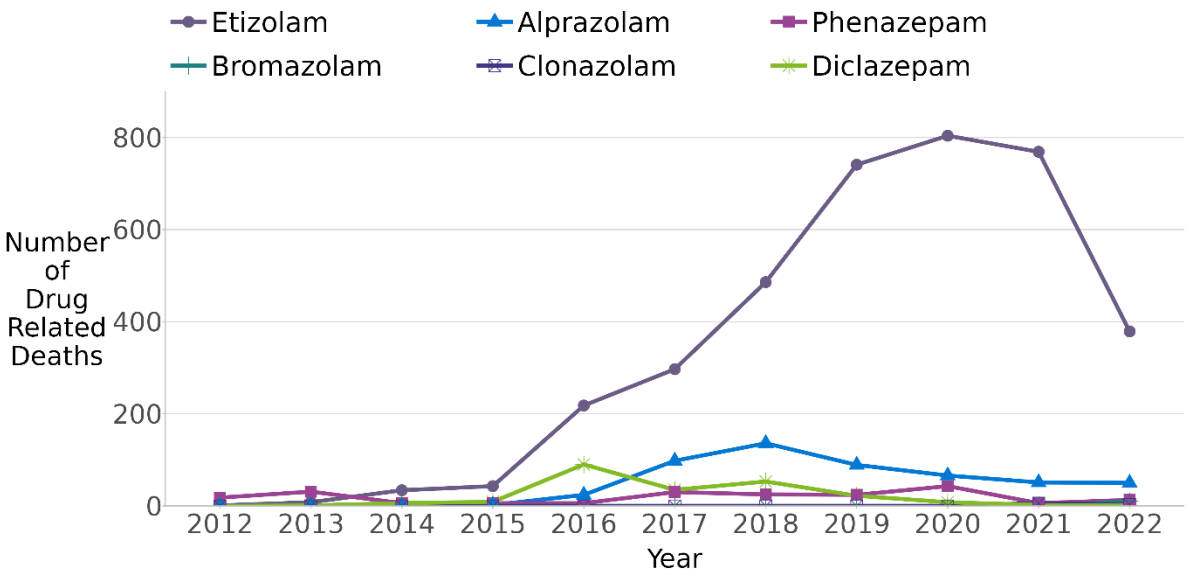


[57] Although referring to the same drugs, the term ‘NPS’ has been used in NDRDD reports in preference to ‘Legal Highs’ because the latter term failed to recognise a) changes in the controls applied to relevant substances and b) the differential effects of those substances.

Changes to both international and national legislation have affected the availability and prevalence of compounds, leading to significant fluctuations in the 'street' benzodiazepine market over recent years. While etizolam became increasingly prevalent during the time period from 2016 to 2020, its international prohibition in 2021, led to decreased availability (and decreased harms) in subsequent years. While bromazolam emerged as the new 'street' benzodiazepine of concern in 2022, the number of deaths associated with it was comparatively low (1%, 10). Given the association between ‘street’ benzodiazepine presence/implication and the overall numbers of DRDs in recent years (Figure 8), it is likely that the decrease in DRDs observed in 2022 was associated with changes in the demand for, or supply of 'street' benzodiazepines. More recent information can be found at **Public Health Scotland, RADAR: New Benzodiazepines in Scotland**.

In 2022, the most frequently implicated 'street' benzodiazepines were etizolam (72%, 379), alprazolam (10%, 50), phenazepam (2%, 13), bromazolam (2%, 10), clonazolam (1%, 3) and diclazepam (<1%, 1) (Figure 9).

Figure 9: Most Common 'Street' Benzodiazepines Implicated in Drug Related Deaths (NDRDD/NRS: 2012-2022)



In 2022, all but six 'street' benzodiazepine deaths also had other drugs implicated. The non-benzodiazepine drugs most commonly co-implicated were methadone (310), heroin (231), cocaine (189) and pregabalin (179) (data not shown in tables). More than half (65%, 323) were in contact with a drug treatment service at the time of death and 49% (242) were in receipt of a methadone prescription prior to death. 'Street' benzodiazepines were implicated in a lower percentage of non-intentional DRDs than intentional DRDs (1% (5) vs 99% (490)) (data not shown in tables).

Summary

- In 2022, multiple substances were implicated in over three quarters (83%) of DRDs.
- Opioids (methadone, heroin, morphine or buprenorphine) were implicated in over two thirds (72%) of DRDs in 2022.
- Methadone (47%), heroin/morphine (41%) and etizolam (38%) were the substances most commonly implicated in deaths in 2022.
- The number of DRDs where cocaine was implicated increased across the time series, to 36% in 2022. Cocaine was implicated in roughly half (49%) of DRDs among people aged under 25 years.
- Gabapentin and pregabalin implication increased over time, potentially due to their use to enhance the effects of opioids. In 2022, gabapentin or pregabalin were implicated in 36% deaths.
- Etizolam (a ‘street’ benzodiazepine) implication decreased sharply from 58% in 2021 to 38% in 2022, following international prohibition in 2021. Changes in the overall number of DRDs closely mirrored trends in ‘street’ benzodiazepine implication, suggesting an association between availability and harms.

Prescribing[58]

People who use drugs tend to have higher rates of morbidity and mortality than the rest of the population [17]. As a result, rates of prescribing for medical and psychiatric conditions are likely to be higher than in the general population. The prescribing burden for this group is additionally increased by Opioid Substitution Therapy (OST) prescribing – the dominant form of treatment for opioid dependence.

In the toxicology findings (**Toxicology Data**), prescribed drugs (e.g. methadone, buprenorphine, diazepam, gabapentin, pregabalin, anti-depressants) were often present and/or implicated in deaths. Use of illicit substances alongside prescribed medications can increase drug toxicity and the risk of adverse health-related outcomes (particularly for people prescribed OST, where higher risks of overdose and blood borne virus infection have been documented [11]).

This section describes the extent of prescribing among people who had a DRD and includes comparisons with the presence of prescribed drugs at post-mortem, highlighting potential issues associated with compliance and/or diversion of prescribed drugs.

OST prescribing

As discussed in Sections **Substitute Prescribing** and **Drug Treatment Services**, a substantial minority of people whose death was opioid-related[59], were in contact with

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[58] Difficulties with NDRDD data collection of prescribed OST information (i.e. supervision status, length of time in receipt) resulted in high levels of unknowns (above 10%). The percentage of unknowns have been listed in the data tables.

[59] Since 2011, NRS has supplied data on drugs implicated in death. Opioid-related deaths are those where heroin, morphine, methadone or buprenorphine were implicated, or potentially contributed to death. For years before 2011, presence of those drugs in the body at post-mortem is used as a proxy indicator.

drug treatment services (35% in 2012, 46% in 2021, and 45% in 2022 - Table 23) or prescribed an OST medication at the time of death (2012: 34%; 2021: 51%; 2022: 54% - Table 10). Further, methadone (an OST drug) was the substance most commonly implicated in DRDs in 2022.

The high prevalence of specialist drug treatment contact and OST prescribing prior to death raises questions about the role of treatment interventions in protecting against adverse health outcomes. Aspects of treatment such as OST dosing and adherence are explored here, along with the potential impact of non-compliance with treatment.

OST dosage and supervision

In 2022, 41% (404) of people were prescribed an OST at the time of their death. Almost two thirds (65%, 221) of those receiving methadone or oral buprenorphine (alone, or in a combined formulation with naloxone) were prescribed a normal daily therapeutic dose (methadone: 60-120mg, buprenorphine: 12-16mg) as recommended by the 'Orange Guidelines' [11]. Around one third (33%, 111) were prescribed a lower than recommended dose and only 2% (six) were prescribed a higher than recommended dose (Table 54)[60]. While the percentage prescribed a normal daily therapeutic OST dose has fluctuated over the time series, it has not been lower than 50% of relevant cases in any year.

In 2022, the mean daily methadone dose was 68.2mg, which was within the average range over the time series (between 66mg and 71mg). In 2022, the mean daily buprenorphine dose was 10.8mg (mean buprenorphine dose varied considerably over the time series due to the low number of cases observed each year) (Table 54).

Mean daily methadone dosages were analysed by sex and age group. In 2022, the average doses for males (68.1ml) and females (68.2ml) were similar. The 2022

[60] Long-acting injectable buprenorphine (including Buvidal® slow-release formulations were not included in the analysis of dosage (Table 54).

averages were also roughly the same as the average daily methadone doses across the entire time series (2012-2022) (Males: 68.4ml; Females: 68.9ml).

Since 2012, over three quarters of OST prescriptions among people who had a DRD had been supervised[61]. In 2021, where known, 69% (287) of OST prescriptions were supervised, including 69% (253) of methadone prescriptions. In 2022, where known, 64% (177) of OST prescriptions were supervised, including 63% (163) of methadone prescriptions (Table 55).

Where the length of time prescribed OST was known, 84% (152) of people who had a DRD in 2022 and were prescribed OST had received their medication for one year or more and 39% (70) had received it for over ten years. The percentage of people prescribed an OST drug for less than one year increased in 2019 and 2020 (32% in both years) but has since returned to previous levels (2021: 24%, 2022:17%) (Table 56). Recent changes in data should be considered with caution due to data quality issues.

OST compliance and effectiveness

In 2022, 96% (349) of those prescribed methadone had methadone present in their body at post-mortem[62]. While it is not possible to ascertain if people had consumed illicit methadone in addition to their prescribed methadone, presence among prescribees was similar across the time series (ranging between 95%-100%) (data not shown in tables).

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[61] 'Supervision' may cover a wide range of scenarios from daily (7 day) supervised consumption to supervised consumption once per week on the day of collection only. Recording of OST supervision in NDRDD is based on the last dose dispensed prior to death.

[62] Post-mortem toxicology can be affected by factors such as decomposition and detection limits, which may reduce the likelihood of identifying OST drugs even when they were taken as prescribed.

Methadone presence among those not prescribed is likely to vary according to the availability of illicit opiates. Therefore, 30% of non-prescribees had methadone present at post-mortem in 2012 (during the heroin drought, [18]), which was followed by a period of relative stability (21% to 23%) between 2014 and 2019[63]. Methadone presence in those not prescribed methadone at time of death was higher in 2020 (32%) and in 2021 (28%) than in the previous five years. In 2022, methadone was present in the deaths of 22% of non-prescribees - similar to the period before 2020.

In 2022, buprenorphine[64] presence was recorded at post-mortem in 70% (28/40) of people prescribed this drug at the time of death and in 5% (48/956/) of non-prescribees. Over the entire time series (2012-2022), 76% of prescribees and 5% of non-prescribees had buprenorphine present at post-mortem (data not shown in tables). Because of the smaller number of people prescribed buprenorphine, there was considerable variation between years in the percentage of deaths where it was present at post-mortem. However, in 2022 (70%) and across the time series (77%), the percentage of buprenorphine prescribees with buprenorphine present at post-mortem was significantly lower than the equivalent percentages among methadone prescribees (2012-2022: 96%, 2022: 96%).

There was clear evidence of illicit opioid use among people who died while prescribed OST. In 2022, 48% (192) of those in receipt of an OST had heroin/morphine present at post-mortem, compared to 47% (275) not prescribed OST. However, the percentage of OST prescribees who had heroin/morphine present at death decreased from 2016 (61%; the highest recorded) (Table 58). In 2022, the percentage of people who had diazepam, etizolam and pregabalin present

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[63] Methadone implication in those not prescribed methadone:
2012: 30%, 2013: 28%, 2014: 21%, 2015: 18%, 2016: 18% 2017: 21%, 2018: 23%, 2019: 21%, 2020: 32%, 2021: 28%, 2022: 22%.

[64] Buprenorphine includes oral and long-acting injectable buprenorphine (including Buvidal® slow-release formulations).

at post-mortem was higher among people in receipt of an OST than among those who were not[65] (Table 57).

In 2022, heroin/morphine was present at post-mortem in 48% (19/40) of people who were prescribed buprenorphine at the time of death - the same as the percentage among those prescribed methadone (48%, 172/362). Heroin/morphine presence was higher among buprenorphine prescribees across the time series (buprenorphine: 204/313, 65%; methadone: 1,622/2,552, 48%) (data not shown in tables).

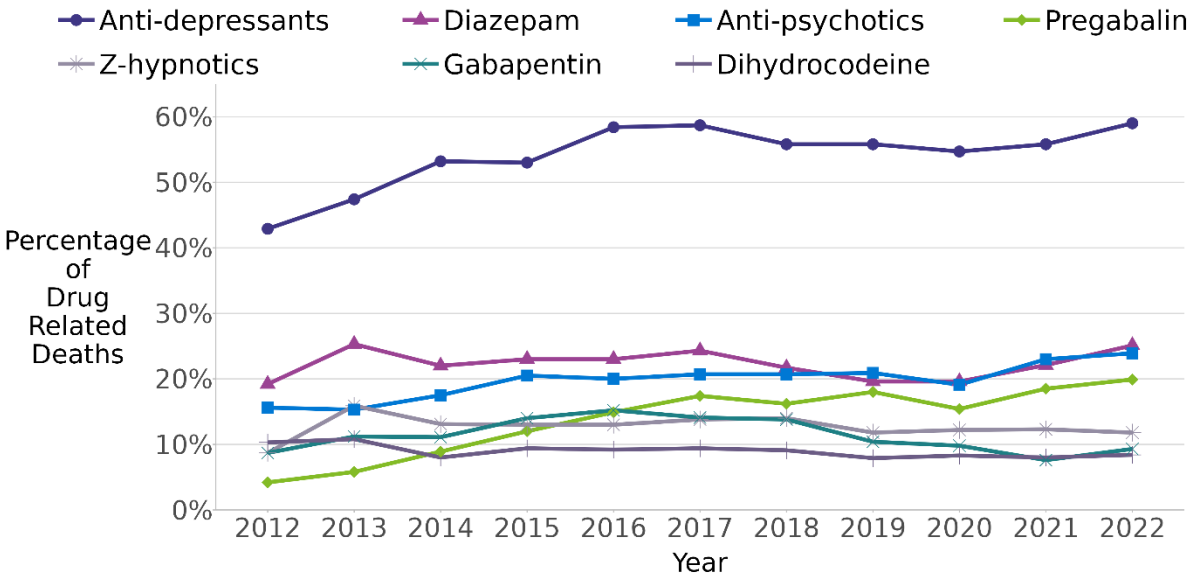
Presence of Other Prescribed Medications[66]

Most deaths among people prescribed OST involved the consumption of other substances, some of which (e.g. diazepam, gabapentin) may have been legitimately prescribed. Using data from PHS's Prescribing Information System (PIS), it is possible to identify recent (within 90 days of death) dispensing activity in relation to specific medications (Figure 10).

[65] Prescribed an OST (2022); diazepam: 42%, etizolam: 51% and pregabalin: 52% Not prescribed an OST (2022); diazepam: 30%, etizolam: 33% and pregabalin: 29%.

[66] Previous reports categorised 'recent' prescriptions as those within 30 days of death. This has been changed to 90 days following advice from PHS Pharmacists. In some cases exact dispensing dates are not provided in the Prescribing Information System (PIS), which instead defaults to the last day of the month, when the prescription was paid. While there may be issues with the reliability of some dates, the analysis presented provides a robust estimation of people prescribed specific drugs. While CHI completeness is more problematic in relation to OST drugs, information on other types of prescriptions may also be influenced by this issue.

Figure 10: Prescriptions within 90 days of Death (NDRDD/PIS: 2012-2022)



Anti-depressants

In 2022, anti-depressant prescribing was observed in the three months prior to death in 60% of DRDs (587). There has been an overall increasing trend in recent anti-depressant prescribing from 2012 (43%) onwards (Table 62 and Figure 10).

Different patterns of drug prescription were observed between intentional and non-intentional deaths. Where known, in 2022, recent prescription of any anti-depressant was higher in intentional DRDs (71%, 44/62) than non-intentional DRDs (58%, 543/933).

Over half (340/587, 58%) of those recently prescribed anti-depressants had them present at post-mortem (Table 63). Anti-depressants were also found at post-mortem in 14% (55/403) of people not recently prescribed them. Anti-depressant presence at post-mortem decreased over the time series among both groups (2012: 71% and 23% respectively).

In 2022, recent anti-depressant prescribing was observed among 63% (255) of those prescribed an OST (methadone or buprenorphine (with or without naloxone)) at the time of death and 56% (332) of those who were not. Both percentages increased

over time from 2012 (OST: 50%, non-OST: 40%). Over the entire time series combined, recent anti-depressant prescriptions were more common among those prescribed OST (61%) than those not prescribed OST (51%) (data not shown in tables).

The type of anti-depressants prescribed to people who had a DRD has changed over time (Table 64 and Figure 11). In 2022, among people prescribed an anti-depressant in the 90 days before death, mirtazapine (50%, 292) was the most commonly prescribed drug, followed by amitriptyline (18%, 106), sertraline (16%,92), and fluoxetine (10%, 60). The increasing trend in recent mirtazapine and sertraline prescribing continued, rising from 36% and 10% in 2012 respectively. There was a decreasing trend in citalopram and fluoxetine prescribing from 13% and 19% in 2012. For other anti-depressant drugs there was no clear trend over time. It should be noted that the amitriptyline trend may include instances where the drug was prescribed for chronic pain relief (it was not possible to exclude these cases as the reason for prescribing is not captured in PIS data).

Certain drugs are known to prolong the heart's QT interval[67] [12-14], potentially leading to a life-threatening ventricular arrhythmia called 'torsades de pointes'. Drugs known to be associated with QT prolongation should not be co-prescribed. A small percentage of the cohort had combinations of drugs known to prolong the QT interval (methadone and anti-psychotics or citalopram) present at post-mortem (2022: 6%, 60). There was some variation over time in the percentage of deaths where this combination of drugs was found present, but this has decreased in recent years[68].

The reduction in citalopram prescribing is likely to be associated with warnings regarding co-prescribing of drugs known to prolong the QT interval. In 2022, citalopram had recently been prescribed to 4% (41/996) of people who had a DRD.

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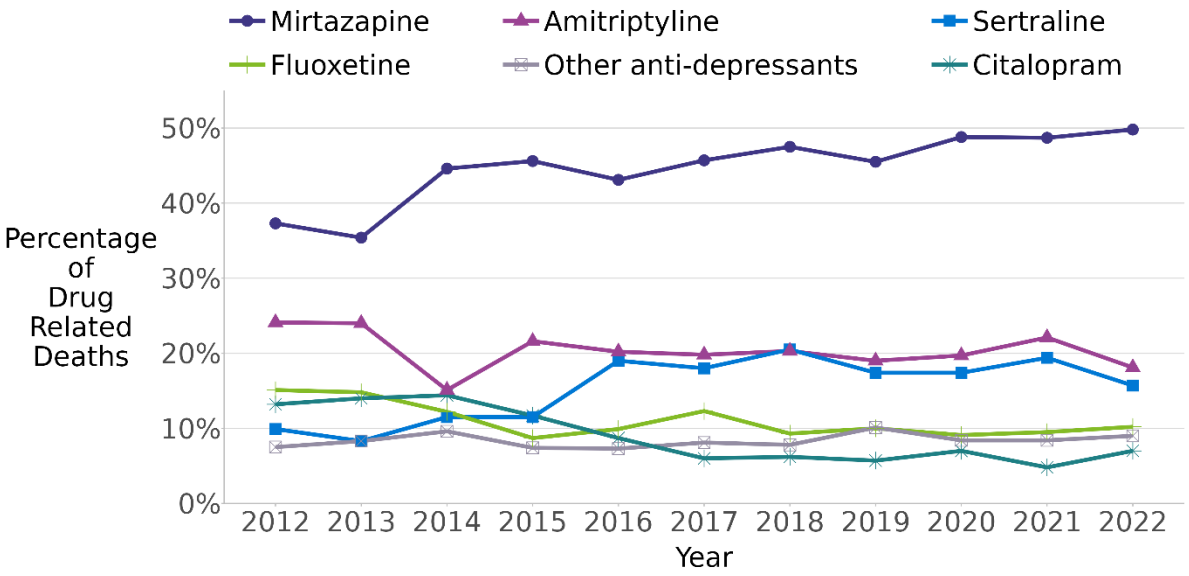
[67] The time between the start of the Q wave and the end of the T wave in the heart's electrical cycle, representing depolarization and repolarization of the ventricles.

[68] Methadone and anti-psychotics or citalopram (2012: 2%, 2013: 7%, 2014: 8%, 2015: 8%, 2016: 8%, 2017: 8%, 2018: 8, 2019: 6%, 2020: 5%, 2021: 7%).

Among these people, methadone and citalopram (both of which are known to prolong the QT interval) were recently co-prescribed in eight (20%) cases. Of eight deaths where both drugs were found present at post-mortem, recent co-prescribing had occurred in four (50%) cases. Over the time series, a total of 64 (<1%) people who had a DRD were prescribed both methadone and citalopram within 90 days of death. In 103 instances of co-presence, 28 (27%) people had recently been co-prescribed these drugs (data not shown in tables).

Figure 11: Anti-Depressant Most Recently Prescribed by Year (NDRDD/PIS: 2012-2022)



Gabapentinoids

Gabapentin and pregabalin are prescribed medications for epilepsy and chronic pain, but at high doses these drugs have been reported to enhance or 'potentiate' the subjective effects of opioids [15]. Recent (within three months) prescribing of these drugs (collectively referred to as gabapentinoids) was observed in 29% (286) of DRDs in 2022. The percentage of people recently prescribed gabapentinoids increased over time (from 13% in 2012).

In cases where gabapentinoids had recently been prescribed, presence of these drugs at post-mortem was 70% (201/286) in 2022. Where not prescribed, these drugs were found in 36% of DRDs (255/710). In 2022, among people recently

prescribed these drugs, gabapentin or pregabalin were implicated in 52% (148) deaths (2012: 22%). Opioids (heroin/morphine, methadone or buprenorphine) were also implicated in 108 (73%) of these deaths (data not shown in tables).

In 2022, prescribing of gabapentinoids in the three months prior to death was observed among 30% (120/404) of those prescribed an OST (methadone or buprenorphine (with or without naloxone)) at the time of death and 28% (166/592) of those who were not. Both percentages increased over time from 2012 (OST: 18%, non-OST: 11%). Over the time series combined, gabapentinoid prescriptions were more common among those prescribed OST (31%) than those not prescribed OST (22%) (data not shown in tables).

Diazepam

In 2022, diazepam was prescribed in the 90 days prior to death to 25% (250) of the NDRDD cohort. Recent prescribing of diazepam fluctuated over the time series ranging between 19% and 25% (Table 62). In 2022, diazepam was found present at post-mortem in 58% (145/250) of people to whom it was recently prescribed, following a decrease over the time series (2012: 92%) (Table 63).

Presence of diazepam among those not recently prescribed has decreased significantly over the time series from 73% in 2012 to 23% in 2022. This reduction is likely to have been associated with the emergence of street benzodiazepines such as etizolam.

In 2022, diazepam was implicated in 57 deaths (23%) of people recently prescribed it. Opioids (heroin/morphine, methadone or buprenorphine) were also implicated in 44 (77%) of these deaths (data not shown in tables).

In 2022, recent diazepam prescribing was observed among 29% (118/404) of those prescribed an OST at the time of death and 22% (132/592) of people who were not. Over the time series combined, those prescribed OST were more likely to be prescribed diazepam (25%) than those who were not (20%) (data not shown in tables).

Antipsychotics

Antipsychotics such as quetiapine and risperidone are used to treat a number of mental health conditions, primarily schizophrenia or bipolar disorder, but can also be prescribed for severe anxiety or depression. Prescribing of anti-psychotics in the three months prior to death was observed in 24% (238) of DRDs in 2022. The percentage of people recently prescribed anti-psychotics has increased over the time series (2012: 16%) (Table 62).

In 2022, where anti-psychotics had recently been prescribed, presence at post-mortem was 37% (87/238), there was considerable variation between yearly cohorts (ranging between 15% and 60%). Where not prescribed, they were found in 2% of DRDs (11/752) - the percentage not prescribed has been stable over the time series (Table 63).

Similar to some anti-depressants (see **Anti-depressants**), anti-psychotics can also contribute to QT prolongation, and this may increase the risks to individuals where co-prescribed. Rather than examining co-prescribing of anti-psychotics with all OSTs, focusing on co-prescribing of methadone and anti-psychotics is more worthwhile, as both are specifically associated with risk of QT interval prolongation [13, 14]. In 2022, 91 (9%) people had recently been co-prescribed methadone and anti-psychotics. Of the 52 people who had a DRD and who had anti-psychotics and methadone present at post-mortem, 35 (67%) had recently been co-prescribed these drugs. Over the time series combined, a total of 809 (8%) people were prescribed this combination of drugs within 90 days of death. Of the 567 people with methadone and anti-psychotics present at post-mortem, 351 (62%) had recently been prescribed these drugs (data not shown in tables).

Broadening this analysis to include other drugs known to prolong the QT interval, 10% (101) of people who had a DRD in 2022 had been prescribed methadone and either citalopram or an anti-psychotic drug within 90 days of death (a total of 868 (9%) over the time series). Comparing prescription of these drugs with presence at post-mortem, 38 of the 60 people (63%) with this drug combination found at post-mortem were prescribed these drugs within 90 days of death (4% of all 2022 DRDs and 357 DRDs (4%) over the time series combined) (data not shown in tables).

Z-hypnotics

Z-hypnotic drugs (principally zopiclone and zolpidem) are used to treat insomnia (a common condition among people who use drugs) and have similar effects (and side-effects) to benzodiazepines. In 2022 z-hypnotics were prescribed within 90 days of death to 12% (117) of the NDRDD cohort. This percentage was stable over time (Table 62).

In 2022, z-hypnotics were found present at post-mortem in 27% (32/117) of DRDs where the person was recently prescribed these drugs. Presence of z-hypnotics at post-mortem among prescribees increased from 2012 (21%) to 2015 (46%) but has since decreased. Presence of z-hypnotics among those not recently prescribed these drugs was 2% (Table 63).

In 2022, recent z-hypnotic prescribing was observed among 14% (57/404) of those prescribed an OST at the time of death and 10% (60/592) of those who were not. Over time, both groups had similar levels of prescribing with no clear patterns of change (data not shown in tables).

Weak opioid analgesics

Dihydrocodeine prescribing in the 90 days prior to death was relatively infrequent (84, 9% of DRDs in 2022) and was fairly static over time. Where recently prescribed, dihydrocodeine was found at post-mortem in 69% (58/84) of deaths (this percentage was stable over time) (Table 63). Where not prescribed, dihydrocodeine was present in 7% (62/912) of deaths in 2022 and decreased over the time series (from 14% in 2012). It is not appropriate to analyse dihydrocodeine prescription by OST group, as dihydrocodeine is often prescribed in order to manage withdrawal symptoms during opioid detoxification.

Recent tramadol prescribing was evident for a small percentage of people who had a DRD in 2022 (52, 5%) and decreased over the time series (Table 62). Tramadol was found present in 71% of recently prescribed people (37/52) in 2022. Tramadol presence among those not recently prescribed was 3% (27/944) and has been relatively consistent over time. In 2022, those prescribed OST were less likely to be

prescribed tramadol than those who were not (2022: 2% (9/404) for OST prescribees, 7% (43/592) for non-OST prescribees) (data not shown in tables).

Strong opioid analgesics

Reflecting concerns about deaths related to the prescribing and/or use of high-strength opioid painkillers, recent oxycodone and fentanyl prescribing was examined.

In 2022, 17 people who had a DRD (2%) were prescribed oxycodone (including the extended-release formulation oxycontin) in the 90 days before death. Recent oxycodone prescribing was rare, with only 167 cases observed across the timeseries (2% of 9,983 DRDs) (Table 62). In 2022, oxycodone was present in 59% (10) of cases where it had been prescribed (Table 63). There were a further 13 deaths where oxycodone was found present among non-prescribees (1%). Across the time series, there were only 12 cases where a recent oxycodone prescription was observed alongside an OST treatment (data not shown in tables).

Fentanyl prescribing among people who had a DRD was extremely rare. Over the time series, a total of 46 people (0.5% of 9,983 DRDs) had recently been prescribed fentanyl. In 2022, fentanyl was found present at post-mortem in 11 people (most of whom had not recently been prescribed the drug). Across the time series, there were only five deaths where fentanyl and an OST treatment were recently co-prescribed (data not shown in tables).

Summary

- Among opioid-related deaths, the percentage of people prescribed an OST at the time of death increased from 34% in 2012 to 54% in 2022.
- In 2022, most OST prescribing at the time of death was well established (one year or more: 84%), via supervised consumption (64%) and within recommended therapeutic dose guidelines (65%).
- In 2022, 48% of people prescribed OST had heroin/morphine present at death, similar to the percentage among those not prescribed OST (47%).

- Prescribing of gabapentin or pregabalin within 90 days of death increased over time to 29% in 2022. Over the time series combined, gabapentin or pregabalin prescriptions were more common among those prescribed OST (30%) than those not prescribed OST (28%).

- Co-prescribing of methadone and either citalopram or anti-psychotics (all associated with a life-threatening ventricular arrhythmia called torsades de pointes) occurred in 91 (9%) cases in 2022. These drugs were co-present in 52 DRDs, 37 (67%) of which were preceded by recent co-prescribing.

- Recent prescribing of strong opioid painkillers was very rare. In 2022, oxycodone or fentanyl were only prescribed to 20 people who had a DRD.

Methadone-Implicated Deaths

Methadone is the most commonly **prescribed OST drug in Scotland** and was the most commonly implicated substance among DRDs registered in Scotland in 2022 (47%, 471).

The risks associated with methadone prescribing are a matter of ongoing concern. Information presented in the previous section highlighted that OST prescribing among those who died of DRD was generally supervised and within recommended dose ranges. However, it was clear that many prescribees consumed illicit opioids prior to death (potentially including additional methadone 'on top' of their prescription) and that methadone-related deaths often occurred among non-prescribees.

This section specifically examines methadone-implicated deaths. For those prescribed methadone, it examines the extent to which dosing regimens may have contributed to deaths or, conversely, whether DRDs occurred in spite of safe prescribing practices. It then examines the characteristics of people who were not prescribed methadone, but had it implicated in their death.

COVID-19 pandemic

The onset of the COVID-19 pandemic brought significant changes to OST dispensing practices, such as longer prescription durations and reduced supervision, in order to minimise the risk of disease transmission. At the same time, widespread restrictions on social contact may have interrupted illicit drug supply networks.

Analysis in the previous report [4], splitting 2020 into two halves, showed that methadone implication was higher in deaths registered in the second half (57%) compared to the first half (49%). While methadone implication among prescribed individuals remained stable (94–96%), implication among non-prescribees increased from 28% in the first half of 2020 to 36% in the second half (data not shown in tables). This trend continued in 2021 with 35% of methadone-implicated deaths occurring among individuals not prescribed methadone. In 2022, 29% of methadone implicated deaths were among non-prescribees - similar to years before the pandemic (Table 58).

During the COVID-19 pandemic there were increases in overall methadone implication among DRDs and in methadone implication among non-prescribed individuals. It is highly likely that the pandemic-related measures described above influenced opioid availability and drug diversion, increasing methadone-related risks. The characteristics of people whose death was methadone-related are explored further below.

Deaths among people prescribed methadone

In 2021, nearly two thirds of people for whom methadone was implicated in death (65%, 410/634) were in receipt of a methadone prescription prior to death (Table 58). Their average age was 46 years and 69% were males. These people were generally on long-term, supervised prescribing regimens within recommended dose guidelines:

- Where supervision status was known, 71% (238) received their prescription on a supervised basis (Table 59).
- Where the length of time of a prescription was known, 76% (198) had been prescribed methadone for one year or more (Table 60).
- Where dosage was known, 55% (154) were prescribed a normal daily therapeutic dose (60-120mg) [11] and 39% (109) were prescribed less than the recommended dose (Table 61).
- In 2022, 94% (387) of methadone-implicated deaths in those prescribed methadone had other drugs implicated at post-mortem. The most common drugs implicated alongside methadone were etizolam (79%, 305), pregabalin (40%, 153), cocaine (34%, 130), heroin/morphine (33%, 127), and diazepam (17%, 64). The percentage of methadone-implicated deaths with etizolam implicated peaked in 2021 (79%) (data not shown in tables).

In 2022, around seven in ten people for whom methadone was implicated in death (71%, 334/471) were in receipt of a methadone prescription prior to death - higher than in 2021 (above) (Table 58). Their average age was 46 years and 66% were males. As in 2021, they were generally on long-term, supervised prescribing regimens within recommended dose guidelines:

- Where supervision status was known, 64% (156) received their prescription on a supervised basis. This should be considered with caution due to potential data quality as supervision status was unknown in 27% of those with methadone implicated (Table 59).

- Where the length of time of a prescription was known, 86% (135) had been prescribed methadone for one year or more (Table 60).

- Where the dosage was known, 66% (205) were prescribed a normal daily therapeutic dose (60-120mg) [11]. Around one third (32%, 98) were prescribed less than the recommended dose (Table 61).

- In 2022, 97% (322) of methadone-implicated deaths in those prescribed methadone had other drugs implicated at post-mortem. The most commonly implicated drugs alongside methadone were etizolam (52%, 169), pregabalin (45%, 146), heroin/morphine (43%, 140), cocaine (36%, 115) and diazepam (20%, 64). The percentage of methadone-implicated deaths where these other drugs were also implicated in death increased over the time series (heroin/morphine: 29% - 44%, pregabalin: 2% - 45% and cocaine: 4% - 36%) (data not shown in tables).

Deaths among people not prescribed methadone

In 2021, around one third of people for whom methadone was implicated in death (34%, 224/634) were not recorded to be in receipt of a methadone prescription prior to death (Table 58). Some interesting differences were evident when comparing this group to those who were prescribed methadone (data not shown in tables).

- People who were not prescribed methadone were, on average, younger (40 years) than those who were prescribed methadone (46 years in 2021). Similar differences were observed across the time series (except for 2014 and 2016), with non-prescribees typically around four years younger than prescribees.

- Over three quarters (77%) of non-prescribees were male.

- Where known, 32% (71) had recent (under six months) contact with a drug treatment service and 51% (114) had been in contact with a drug treatment service at some point in their lives.

- In 2021, 92% (205) of methadone-implicated deaths in those not prescribed methadone had other drugs implicated at post-mortem. The most common drugs implicated alongside methadone were etizolam (69%, 142), heroin/morphine (37%, 75), cocaine (35%, 72) and pregabalin (29%, 60).

In 2022, 29% (137/471) of people for whom methadone was implicated in death were not in receipt of a methadone prescription prior to death - lower than in 2021 (above) (Table 58).

- They were, on average, 43 years old. This was older than the same group in 2021 (40 years) and younger than those who were prescribed methadone in 2022 (46 years).

- Seven in ten (70%) of non-prescribees were male.

- Where known, 41% (56) had recent (under six months) contact with a drug treatment service and 62% (85) had been in contact with a drug treatment service at some point in their lives (this was higher than for the same group in 2021 (51%).

- In 2022, 94% (129) of methadone-implicated deaths in those not prescribed methadone had other drugs implicated at post-mortem. Most commonly these were etizolam (52%, 67), heroin/morphine (48%, 62), cocaine (42%, 54) and pregabalin (33%, 43). Co-implication of these other drugs among this group increased over the time series (heroin/morphine: 26% - 48%, cocaine: 4% - 42% and pregabalin: 0% - 33%).

Summary

- Methadone was implicated in 47% (471) of DRDs registered in Scotland in 2022. The percentage of these deaths that occurred among people not prescribed methadone was 29% (137).

- It is highly likely that COVID-19 pandemic-related measures influenced opioid availability and drug diversion, increasing methadone-related risks. Overall methadone implication was higher in deaths registered in the second half of 2020 (57%) and in 2021 (48%) compared to 2022 (47%). Methadone implication among non-prescribed individuals was also higher in the second half of 2020 (36%) and in 2021 (35%) compared with 2022 (29%).

- In both 2021 and 2022, people who were prescribed methadone and had it implicated in their death were generally on long-term, supervised prescribing regimens within recommended dose guidelines. Almost all had other drugs implicated in their deaths.

In both 2021 and 2022, people who were not prescribed methadone yet had it implicated in their death were younger than those prescribed methadone at the time of death and had relatively low levels of treatment experience. Both age and treatment experience were lower among non-prescribees in 2021 (a year impacted by the COVID-19 pandemic) than among the same group in 2022.

Conclusion

Data from the National Drug-Related Death Database (NDRDD) provides detailed information on Drug-Related Deaths (DRDs) in Scotland, describing the background and circumstances of those who died and highlighting potential areas for intervention.

This report discussed the same DRD cohort (where information was available) as reported in the National Records of Scotland's (NRS) annual publication [1]. It highlights some key points and themes for data recorded on DRDs occurring in 2021 and 2022, when numbers of DRDs decreased markedly.

The most recent Accredited Official Statistics on DRDs report that, in 2024, 1,172 people died of a DRD in Scotland, a decrease of 13% (155 deaths) compared with 2023. Scotland’s DRD rate remains the highest in Europe [1].

Explanations for these high numbers of DRDs are complex. In spite of the delay in publishing these NDRDD data, they provide important insights into this ongoing public health challenge for Scotland.

Demographics:

- Scotland has a cohort of people with a drug problem who have multiple complex health and social care needs. Many people who had a DRD shared similar characteristics: they were male, aged over 35, socially deprived, lived alone and had a history of long term and / or injecting opioid use and near fatal overdose. In 2022, over half (52%) of the people who died resided in the 20% most deprived neighbourhoods in Scotland (Deprivation quintile 1).

- Most people who had a DRD in 2022 lived in their own home (81%). Sixty percent lived alone all of the time, with this percentage increasing over the time series (2012 to 2022).

Contact / Interaction with Services:

- Half (50%) of people who died previously experienced a near fatal overdose.

- In 2022, 29% of people who had a DRD had been discharged from an inpatient stay in a general acute hospital in the six months before death.
- Two thirds (65%) of people (73% of those whose death was opioid-related) were in contact with a service with the potential to address their problematic drug use or deliver harm reduction interventions in the six months before death.
- Over one third of people in 2022 who had a DRD were prescribed an Opioid Substitution Therapy (OST) drug (mainly methadone) at the time of death.

Prescribing / Toxicology:

- In 2022, multiple substances were implicated in over three quarters (83%) of DRDs. Methadone (47%), heroin/morphine (41%) and etizolam (38%) were the substances most commonly implicated in deaths in 2022.
- It is highly likely that COVID-19 pandemic-related measures influenced opioid availability and drug diversion, increasing methadone-related risks. Overall methadone implication was higher in deaths registered in the second half of 2020 (57%) and in 2021 (48%) compared to 2022 (47%). Methadone implication among non-prescribed individuals was also higher in the second half of 2020 (36%) and in 2021 (35%) compared with 2022 (29%).
- Etizolam (a ‘street’ benzodiazepine) implication decreased sharply from 58% in 2021 to 38% in 2022, following international prohibition in 2021. Changes in the overall number of DRDs closely mirrored trends in ‘street’ benzodiazepine implication, suggesting an association between availability and harms.
- The number of DRDs where cocaine was implicated increased across the time series, to 36% in 2022. Cocaine was implicated in roughly half (49%) of DRDs among people aged under 25 years.

PHS hope to deliver the next report in this statistical series (on deaths in 2023 and 2024) with a shorter delay than was the case for this report. This will be part of PHS's work towards achieving the objective of publishing detailed information on DRDs within one year of death, satisfying **recommendations** raised from the NDRDD Short Life Working Group [3]. PHS has already implemented some of these recommendations (see **Appendix 3** for further detail) but will continue this programme of work to modernise the NDRDD and to further improve the timeliness and impact of reporting in future statistical series of this publication.

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Glossary

DRD

Drug-Related Death

EMCDDA

European Monitoring Centre for Drugs and Drug Addiction

ICD

International Classification of Diseases

ISD

Information Services Division

NDRDD

National Drug-Related Deaths Database

NK-PWUD

People Not Known as a Person who Used Drugs

NPS

Novel Psychoactive Substances. Drugs which affect the central nervous system and which are not licensed for medical use or legally controlled at the point they become available an illicit drug market.

NRS

National Records of Scotland

PHS

Public Health Scotland

PIS

Public Health Scotland's Prescribing Information System

PWID≤10

People who Injected Drugs for 10 years and less

PWID>10

People who Injected Drugs for more than 10 years

PWUD

People who Used Drugs (but were not known to inject)

OST

Opioid Substitution Therapy

QT Interval

The time between the start of the Q wave and the end of the T wave in the heart's electrical cycle, representing depolarization and repolarization of the ventricles. Certain drugs are known to prolong the heart’s QT interval, potentially leading to a life-threatening ventricular arrhythmia called ‘torsades de pointes’.

Regimen

A prescribed course of medical treatment, diet, or exercise for the promotion or restoration of health.

SIMD

Scottish Index of Multiple Deprivation

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Appendix 1 – Data Collection

Appendix 1.1 – Data Collection Development

National Drug-Related Death Database Governance

The National Forum on Drug-Related Deaths (NFDRD) Research and Data Monitoring Subgroup (formerly known as the Data Collection Subgroup) established the National Drug-Related Death Database (NDRDD), oversaw the process of data collection and steered the delivery of this report until 2015.

Between 2016 and 2018, oversight of the NDRDD lay with the **Partnership for Action on Drugs in Scotland (PADS)** Harms Subgroup.

More recently, Information Services Division (ISD) Scotland (now part of Public Health Scotland (PHS)) and the Scottish Government jointly convened a Short Life Working Group (SLWG) on Drug Death Reporting (see **Appendix 3**). While the scope of this group was primarily on the statistics and reporting, its recommendations included some elements relating to governance.

Whilst the NDRDD is led by PHS, all oversight groups were comprised of people from a range of organisations and professional backgrounds.

The National Drug-Related Death Database Data Collection Form

The proforma used for NDRDD data collection was developed by the NFDRD Data Collection Subgroup. It was designed to collect data on a wide range of details concerning people's social circumstances and health prior to death. These variables include socio-demographic information, drug use history, medical history, circumstances surrounding the death, details of substitute prescriptions and drugs detected in the person's body through toxicological and pathological examination. In addition, data are collected regarding the individual's contact with services (e.g. health, social care and criminal justice) prior to death. Although the dataset has been

reviewed each year since its inception, the core data items collected currently remain unchanged.

Recommendations raised as part of the SLWG were published in April 2022, which included support for a full dataset review as a means of overcoming some of the current challenges faced by the NDRDD. In 2023, PHS held a series of meetings with stakeholders and partners to conduct this full dataset review and it is anticipated that an updated dataset will be used in the collection of data for deaths registered in 2025.

Appendix 1.2 – Data Collection Process

Case Identification

In the event of an unexpected death, police officers attending the scene of death complete a Sudden Death Report which is passed to the Procurator Fiscal[69]. The Procurator Fiscal then calls for a full pathological and toxicological post-mortem examination to be conducted to determine the cause of death. The findings from these investigative processes are used by NRS to determine the number of DRDs in Scotland.

Based on the information available to them locally and from PHS, the NHS Board DRD review group and DCC decide if a death matches the inclusion criteria for the NDRDD (i.e. if it is likely to be a Drug-Related Death (DRD) as per the NDRDD definition). If these criteria are met, a case record is submitted to PHS. When numbers of DRDs registered in a specific year are confirmed by NRS, PHS request that any missing cases are submitted by DCCs.

Alignment with the NRS definition in this publication, including applying this over the time series, has however resulted in missing cases due to deaths not being

[69] **Our role in investigating deaths | COPFS**

submitted to NDRDD (explained further in **Appendix 2**). It is anticipated that data submissions will improve in future reporting years, improving data quality.

Data Sources and Data Collection

Information surrounding the circumstances of death and information on the person who died is collected from a wide range of sources. These sources include the Scottish Prison Service, Police Scotland and Scottish Ambulance Service as well as notes from drug treatment services, GPs, psychiatrists, hospitals and pharmacies. For most NDRDD data items, information sources were identical between NHS Boards. However, for some items there may be local variations in their recording practices.

Information Support, Data Entry and Data Transfer

Prior to the collection of data on 2014 deaths, PHS implemented a secure online database enabling direct entry of DRD information by DCCs. Information was recorded and validated using the secure online Oracle database administered by PHS. These data were then anonymised and added to the composite NDRDD dataset.

Incorporation of 'Drugs Implicated' Data from National Records of Scotland

The NDRDD dataset provides information about the drugs present in the body at post-mortem. National Record of Scotland (NRS) provides additional information about whether substances were (i) implicated in the death and (ii) not implicated in the death. Pathologists provide NRS with additional information about most DRDs. However, when information is not received, NRS assumes all drugs mentioned on the death certificate were implicated in the death.

Presence of a drug in the body at post-mortem does not necessarily mean that the drug contributed to death and interpretation of post-mortem toxicology is complex. The determination as to whether a drug has caused or contributed to death lies with

the pathologist who will consider toxicological findings in combination with pathological and circumstantial evidence before coming to a conclusion.

This report incorporates this information, which was supplied to PHS by NRS with the relevant permissions and subsequently matched to the NDRDD dataset. The supplementary NRS information allows for a more meaningful analysis of the circumstances of individual drug deaths, taking into account the substances that have contributed towards deaths.

Appendix 1.3 – Data Quality Assurance

Within the electronic spreadsheet and Oracle database, data were automatically checked at the point of data entry and subsequently cross-matched with records obtained from the NRS Vital Events database which contains the records of all those who die in Scotland. ICD-10 diagnosis codes were then extracted and compared with the relevant codes within the NDRDD. This quality assurance process makes it possible to thoroughly investigate any differences between the NDRDD and NRS data. Details regarding the outcomes of this matching process can be found in **Appendix 2**.

Appendix 1.4 – Statistical Testing

Data were analysed descriptively using R.

Comparisons of proportions where samples were expected to be similar in nature (e.g. single year NDRDD cohorts) were tested using a T-test. A chi-square test was used where groups were thought to be different in nature (e.g. males and females). Where comparisons involved small numbers of cases (e.g. inter-year comparison of Availability of Take-home Naloxone), Fisher's exact test was used. While the T-test was used where individual years appeared to be outliers, a chi-square test for trend was used where there was evidence of linear change over time.

Differences in means were tested using an Independent Samples T-test and Welch's ANOVA. Medians were tested using Mood's Median Test and Kruskal-Wallis Test.

Data Confidentiality and Information Governance

The data collected for the NDRDD are not directly covered by the Data Protection Act 2018, which relates only to living people. However, PHS maintains a duty of confidence to protect data relating to deceased people after their death. Person-identifying details regarding each individual are entered into the NDRDD as this information is necessary for linkage to other datasets. All measures are taken to protect the confidentiality of these data and the NDRDD project adheres to the seven Caldicott Guardian Principles.

Appendix 2 – Construction of the 2021 and 2022 NDRDD Cohorts

The National Drug-Related Deaths Database (NDRDD) provides a descriptive account of deaths on which National Records of Scotland (NRS) have published Accredited Official Statistics in its annual DRD report [1,2].

NRS review the death certificates for all deaths registered in a given calendar year before determining whether or not they were drug-related. Some deaths are also reviewed jointly by NRS and senior clinicians at PHS. The 2022 NRS figure of 1,051 DRDs (1,330 in 2021) was the outcome of this comprehensive process.

Matching National Drug-Related Death Database Records to National Records of Scotland Death Records

As in previous NDRDD reports, data were quality assured by matching records to those held by NRS. In 2022, all NRS records matched an NDRDD submission for DRD, and the same was true for 2021. Therefore, the final 2022 cohort analysed for this report included all individuals recorded by NRS. The number of DRDs submitted to NDRDD that matched an NRS record are shown in the table below.

Year death registered	NRS	NDRDD[1]	Difference (not matched)	Percentage complete
2009	545	399	146	73.2%
2010	485	362	123	74.6%
2011	584	414	170	70.9%
2012	581	511	70	88.0%
2013	527	483	44	91.7%
2014	614	587	27	95.6%
2015	706	691	15	97.9%
2016	868	846	22	97.5%
2017	934	918	16	98.3%

Year death registered	NRS	NDRDD[1]	Difference (not matched)	Percentage complete
2018	1,187	1,080	107	91.0%
2019	1,280	1,245	35	97.3%
2020	1,339	1,335	4	99.7%
2021	1,330	1,330	0	100%
2022	1,051	1,051	0	100%

[1] NDRDD definition did not include deaths by suicide prior to 2012.

A breakdown of the reasons for records (represented by 'Data Excluded') and number of records not submitted to NDRDD or excluded from analysis are shown below, for each reporting year.

Data excluded

Year	No information submitted for DRDs which align with the NRS definition[1]	DCCs unable to meaningfully collect data[2]	Total (NRS DRDs not matched in NDRDD)
2009	136	10	146
2010	119	4	123
2011	155	15	170
2012	67	3	70
2013	29	15	44
2014	12	15	27
2015	15	0	15
2016	22	0	22
2017	7	9	16
2018	19	88	107
2019	3	32	35
2020	1	3	4
2021	0	13	0
2022	0	55	0

[1] Not submitted to NDRDD: deaths were not considered to meet the NDRDD definition by DCCs at the time of data collection. Note also that a small number of cases (3 in 2019 and 1 in 2020) were categorised as a DRD by NRS but no information was collected or submitted, and this omission was not queried by PHS due to an administrative error.

[2] Based on assessment of inclusion criteria: valid data entry information was available on whether an individual, prior to death, had been receiving treatment for OST; had contact with drug treatment services; or had used drugs in the past.

Reasons why National Records of Scotland DRDs were not Captured by the National Drug-Related Death Database Data Collection

Review of a death by the NHS Board DRD review group and subsequent data collection for NDRDD by the DCC is dependent on whether, based on the information available, a death is considered likely to match the inclusion criteria for the NDRDD.

As specific deaths are not confirmed as DRDs until NRS publish their Accredited Official Statistics [1] in August of the year after the death was registered, information from the Police, COPFS, and health and social care services is used to make an interim judgement. This can be limited, and data for a specific death may not be submitted to NDRDD if, at the time of data collection:

1. The pathologist (or the NHS Board DRD review group) decided that the Cause of Death was ‘unascertained’ and that the death should therefore not be classed as a DRD.

2. NRS decided that the death was a DRD because an illicit drug was present in the toxicology findings and was considered to have been implicated, or potentially contributed, to the person's death, but the pathologist (or the NHS Board DRD review group) considered that:

a. either the level of the illicit drug was so small that the death could not be considered as being a DRD, or

b. the only illicit drug(s) listed in the toxicology were being prescribed to the deceased at the time of death and therefore these drugs should not be considered as being illicit

NRS is not informed about the levels of drugs found, or whether the drugs had been prescribed to the deceased. In any case, the 'UK Drug Strategy' DRD definition (which NRS applies) does not exclude deaths because there was a low level of drug found or because they had been prescribed to the deceased (see Paragraph A2.2 in **Annex A** of the NRS report on 2022 deaths).

3. Where the pathologist's Cause of Death consisted of several elements, only one of which was related to illicit drug intoxication, and where the pathologist (or the NHS Board DRD review group) decided that the non-illicit drug element was the main cause of death whereas the NRS decided that the death was in fact drug-related (it should be noted that in the majority of cases where the Cause of Death consists of several elements the NRS reach the same conclusion as the pathologist as to what the single main Cause of Death is).

4. The DCC was not informed about a DRD. For example, when there was no evidence at the time of death to suggest a potential DRD, the Police Sudden Death report would not show the death as being a suspected DRD. Occasionally, via post-mortem and toxicology testing, the Procurator Fiscal will later find that such a death was a DRD. In some areas the Procurator Fiscal may not inform the police and the NHS Board DRD review group about such a DRD and consequently PHS will not be sent a NDRDD record. The NRS will normally know about these DRDs as they receive toxicology and cause of death information directly from the pathologist. Note that this scenario should not arise in areas where the pathologist has direct links with the NHS Board DRD review group and the DCC.

5. There is an ongoing criminal investigation surrounding a DRD and the Procurator Fiscal has not given permission for certain information relating to a death to be released to the DCC and the DCC has consequently been unable to complete a NDRDD record for the death. However, the NRS may have enough available information to define the death as a DRD.

6. For the NDRDD, the place where someone dies determines what area the death is assigned to. However, NRS's figures for DRDs in Scotland are normally registered by the geographical area of the usual place of residence of the deceased. If the place of residence is outside Scotland, then the location of death within Scotland is assigned. In the case of someone who had recently moved residence within Scotland, NRS is likely to count the death by the former area of residence (provided that he/she had been resident there for at least 12 months). This could lead to small discrepancies in the number of DRDs that NRS and NDRDD assign to a particular area of Scotland.

When the DRDs registered in a specific year are confirmed by NRS, lists of these are sent to PHS and then distributed to DCCs. At that time, PHS requests that data on cases which are missing from the NDRDD are collected and submitted to the database. However, given the delay, DCCs may be unable to collect data on such cases or only able to collect limited data.

Since 2022, PHS has received toxicology and pathology information from COPFS and routinely distributed this to DCCs in order to address differences in access to information between areas and better inform the local process of deciding whether to review a death.

Data Recorded as 'Unknown' across NHS Boards in 2021 and 2022

Due to the data collection challenges experienced by DCCs (including issues related to COVID-19 and data accessibility), higher numbers of missing or 'Unknown' responses were recorded for some NDRDD proforma questions. The table below highlights the questions most affected, focussing on those where greater than 10% of responses were 'Unknown' in either 2021 or 2022, or where the percentage has generally increased or remained high across the time series. For some proforma questions, sub-categories of 'Unknown' were also recorded; where these were included alongside missing/unknown responses, they are shown in the table under *Unknown Definition*, otherwise they are presented simply as 'Unknown'. NHS Boards listed under *Health Boards* are those where the percentage of 'Unknown' exceeded 10% in 2022, calculated using each NHS Board's own denominator.

NDRDD Section: Demographics

NDRDD Sub Section	Unknown Definition (included sub-categories)	Percentage of Unknown Cases 2021	Percentage of Unknown Cases 2022	Health Boards (>10% Unknown)
Living Where	Unknown	7.2%	8.8%	Ayrshire & Arran, GGC, Highland, Tayside
Living With	Unknown	7.6%	11.1%	GGC, Highland, Tayside
Parent / Parental Figure	Unknown	13.6%	13.8%	Ayrshire & Arran, Borders, Dumfries & Galloway, Grampian, GGC, Highland, Tayside
Living With Children	Unknown	11.5%	13.6%	Ayrshire & Arran, Grampian, GGC, Highland, Tayside

NDRDD Section: Substance Use History

NDRDD Sub Section	Unknown Definition (included sub-categories)	Percentage of Unknown Cases 2021	Percentage of Unknown Cases 2022	Health Boards (>10% Unknown)
Length of Injecting Drug Use	No access No Recorded Evidence Unknown	45.8%	26.3%	Borders, Dumfries & Galloway, Fife, Forth Valley, GGC, Highland, Lothian, Shetland, Tayside
Drug Detox	No access Unknown	17.2%	7.9%	Dumfries & Galloway, Fife, GGC, Highland
Number of Overdoses Experienced	No access Unknown	9.1%	12.1%	Borders, Dumfries & Galloway, Fife, Highland, Shetland, Tayside, Western Isles
Length of time since previous overdose	Unknown	9.9%	10.7%	Borders, Dumfries & Galloway, Fife, Grampian, Highland, Lothian, Tayside, Western Isles

NDRDD Section: Medical and Psychiatric history

NDRDD Sub Section	Unknown Definition (included sub-categories)	Percentage of Unknown Cases 2021	Percentage of Unknown Cases 2022	Health Boards (>10% Unknown)
Significant event experienced in the six months prior	No access Unknown	2.6%	10.4%	GGC

NDRDD Section: Contact with Services

NDRDD Sub Section	Unknown Definition (included sub-categories)	Percentage of Unknown Cases 2021	Percentage of Unknown Cases 2022	Health Boards (>10% Unknown)
Police Custody	No access Unknown	19.4%	15.3%	Forth Valley, Grampian, GGC, Highland, Shetland, Tayside
Prison Custody	No access Unknown	12.3%	23.3%	Fife, Forth Valley, GGC, Highland, Lothian, Shetland, Tayside

NDRDD Section: Circumstances of Death

NDRDD Sub Section	Unknown Definition (included sub-categories)	Percentage of Unknown Cases 2021	Percentage of Unknown Cases 2022	Health Boards (>10% Unknown)
Place of Drug Use	No access Unknown	13.9%	10.9%	Ayrshire & Arran, Borders, GGC, Highland, Shetland Tayside
Persons Present at Scene of Death	No access Unknown	18.7%	22%	Ayrshire & Arran, Borders, GGC, Highland, Lanarkshire, Tayside
Resuscitation Attempted	No access Unknown	14.3%	13.5%	Ayrshire & Arran, GGC, Highland Lanarkshire
Take-Home Naloxone Available (opioid related deaths)	No access Unknown	64.9%	47.5%	Ayrshire & Arran, Borders, Dumfries & Galloway, Forth Valley, Grampian, GGC, Highland, Lanarkshire, Shetland, Tayside

NDRDD Sub Section	Unknown Definition (included sub-categories)	Percentage of Unknown Cases 2021	Percentage of Unknown Cases 2022	Health Boards (>10% Unknown)
Take-Home Naloxone Supplied	No access Unknown	45.6%	15.0%	Borders, Forth Valley, Grampian, GGC, Highland, Shetland, Tayside

NDRDD Section: Prescribing

NDRDD Sub Section	Unknown Definition (included sub-categories)	Percentage of Unknown Cases 2021	Percentage of Unknown Cases 2022	Health Boards (>10% Unknown)
OST - Daily Dosage	Unknown	13.3%	13.6%	Dumfries & Galloway, Fife, Forth Valley, Grampian, Lanarkshire, Lothian
OST - Supervision Status (All OST)	Unknown	22.3%	31.6%	Dumfries & Galloway, Fife, Forth Valley, Grampian, GGC, Lanarkshire, Lothian
OST - Length of Time in Receipt	Unknown	41.9%	55.0%	Borders, Dumfries & Galloway, Fife, Forth Valley, Grampian, GGC, Lanarkshire, Lothian, Tayside

Appendix 3 – NDRDD Drug Death Reporting Short Life Working Group

Some of the issues described in this report in relation to data quality informed the decision by Information Services Division (ISD) Scotland (now part of Public Health Scotland) and the Scottish Government to jointly convene a Short Life Working Group (SLWG) on Drug Death Reporting.

Taking particular account of the increasing volume of DRDs and the difficulties experienced in gathering information about them, it was felt that the role of the NDRDD in the context of drug death reporting in Scotland needed to be formally evaluated. Having started this process in 2019, Public Health Scotland (PHS) and the Scottish Government originally intended to host a series of meetings during 2020. However, the COVID-19 pandemic necessitated a delay and meetings were instead held in the first half of 2021.

In the course of four meetings, a representative multi-agency SLWG concluded that the NDRDD data collection was valuable, but was not realising its potential in helping to prevent DRDs due to reporting delays and the limited accessibility of its findings. PHS published a **summary** of the Short Life Working Group findings and recommendations in April 2022.

At the beginning of 2022, PHS received funding from the Scottish Government to implement these recommendations. While further action is required in order to fully address the issues identified, PHS has already implemented the following changes:

- Allocated additional data management, analytical and communication resources to NDRDD reporting.
- Appointed a National DRD DCC.
- Change to reporting by registration of death (rather than year of death) as in the NRS reports.
- Incorporation of deaths by suicide in the main findings of the NDRDD report.

- Providing alternative outputs and visualisations in order to enhance the accessibility of information for different audiences.

- Completion of a full review of the NDRDD dataset and engagement with partners to make better use of data linkage.

PHS will continue the programme of work to modernise the NDRDD and to further improve the timeliness and impact of reporting in future statistical series of this publication. This will be part of PHS's work towards achieving the objective of publishing detailed information on DRDs within one year of death.

Appendix 4 - NDRDD Dataset Short Life Working Group

Following the 2021 Drug Death Reporting Short Life Working Group (SLWG), a second multi-agency SLWG was established to enhance the National Drug-Related Death Database (NDRDD).

Public Health Scotland (PHS) began this work by auditing all NDRDD submissions for data quality and completeness, and by gathering stakeholder feedback through surveys and meetings.

Membership and Meetings

The SLWG brought together representatives from public health, government, lived experience, families, psychiatry, psychology, ambulance service, police, prisons, Alcohol and Drug Partnerships, and local coordinators. The group also consulted with Scottish Families Affected by Alcohol and Drugs (SFAD) family's group for their views on what information would be important to consider, and their feedback has been incorporated into the development of this dataset. Their valuable contributions have also been shared with other relevant workstreams. Between November 2022 and July 2023, the group met six times to review the entire dataset using structured assessment criteria. This resulted in extensive revisions summarised below.

Key Dataset Changes

1. Whole Dataset

- Reduced from 87 to 33 questions, based on criteria including clarity, reliability of data sources, reporting usefulness, and need for objective evidence.
- Language updated in line with Moving Beyond People First Language, removing outdated or inappropriate terminology.
- Recent history timeframe extended from 6 to 12 months, reflecting evidence from Scottish Families Affected by Alcohol and Drugs (SFAD) and literature that a longer period is more realistic.
- New ability to record local-use-only cases, enabling areas to capture local intelligence not included in national statistics.

- Improved guidance now includes practical examples for more consistent recording.

2. Personal renamed to Personal & Social History

- Employment status has been removed for the time being. Over 85% of cases recorded within NDRDD being either unemployed or on long-term sick, the SLWG felt that it was more important for DRD reviews to explore any meaningful activities the person was engaged with. Although the importance of this is recognised, data is not yet consistent enough to provide an accurate picture both locally and nationally. This question may be re-added at a later stage following improvements in data access and recording.
- Relationship status updated with more accurate variables based on past responses.
- Living situation updated to include Armed Forces, Prison / Young Offender Institution /Children's Secure Unit and Specialist Rehab.
- Children defined as under 18, aligned with legal definition.
- New pilot items: recent concerns (e.g., protection issues), Adverse Childhood Experiences (ACEs), and care experience.
- Updated significant events, merging some fields and adding financial problems and gambling harms.

3. Drug Use renamed to Substance User

- Alcohol use and near-fatal overdose history moved here from medical section.
- Addition of method(s) of substance use per substance to capture emerging trends.

4. Medical renamed to Physical and Mental Health

- Removal of time-period classification (past/current).
- Addition of frequently reported conditions such as chronic pain, sensory impairment, significant head or brain injury, ADHD, and autism.

5. Substitutes renamed to Medication Assisted Treatment & Other Prescribed Medication

- Updated medication list (e.g., Buvidal, diamorphine).
- Ability to record usual dispensing pharmacy.
- Recording of dose changes which may affect tolerance.

6. Contact renamed to Contact with Services

- Updated service types.
- Ability to record date, reason, and type of last contact (phone, in-person, text/email).

7. Criminal Justice renamed to Contact with Justice Settings

- Updated establishments.
- Reduced timescales for relevance.

8. Scene of Death

- Removed "place of drug use" and "persons present" due to unreliability.
- Added interventions before ambulance arrival (e.g., CPR, defibrillator, naloxone).

9. Cause of Death & Toxicology

- Removal of testing sites and units, agreed at SLWG and coordinators meeting to be too complex to be meaningfully included within data collection.

Progress Since SLWG

- Feedback reviewed and each question scored.
- Revised dataset drafted using standard definitions and aligned with relevant policies.
- Further refined after feedback from local coordinators.
- Development of a data dictionary with scenarios for consistent data entry.
- Pilot phase commenced 1 January 2025, running for 12 months with change-control oversight.
- Ongoing support to coordinators via monthly drop-ins and quarterly national meetings, where the dataset is a standing agenda item.

National Information Sharing

PHS is developing a hub-and-spoke national data-sharing model, aiming to reduce workload for coordinators, improve data access, and shorten reporting times. Engagement is underway with:

- Police Scotland – real-time information sharing pilot began May 2025.
- National Records of Scotland (NRS) – provides information on wider drug poisoning cases.
- Scottish Prison Service (SPS) – expanding data exchange to provide custody information.
- Social Security Scotland – establishing new sharing arrangements.
- Royal College of General Practitioners (RCGP) – developing standards for GP data sharing.

Data Linkage

PHS is expanding use of linked national datasets to reduce data collection burden, including hospital admissions, outpatient data, prescribing, ambulance records, A&E, NHS24, and out-of-hours services.

Conclusion and Next Steps

Significant progress has been achieved through extensive collaboration with local coordinators, SLWG members, and national partners, though work continues to refine processes and further improve drug-related intelligence.

Next Steps

- Maintain ongoing stakeholder engagement and identify best practices nationally.
- Review implementation of revised dataset in 2026.
- Continue development of national information-sharing agreements.
- Keep NDRDD guidance as a live document.
- Work with IT suppliers on an upgraded data-recording system.

Appendix 5 – Publication metadata

Publication title

The National Drug-Related Deaths Database (Scotland) Report: Analysis of Deaths registered in 2021 and 2022

Description

A detailed examination of Drug-Related Deaths registered in Scotland in 2021 and 2022 (including trend data from 2012 where available).

Theme

Health and Social Care

Topic

Drug Related Mortality

Format

PDF with Excel Tables

Data source(s)

Data from the National Drug-Related Deaths Database (NDRDD) held by PHS. Data are collected at a local level by DCC. For each record they access a variety of sources including drug treatment services, GPs, prisons, police etc. Data from the National Records of Scotland (NRS) for drug-related deaths in 2021 and 2022. This was supplied to PHS by the NRS for this report.

Date that data are acquired

December 2024

Release date

17 March 2026

Frequency

Biennial

Timeframe of data and timeliness

All drug-related deaths as reported in the NRS National Statistics annual publication that were registered in calendar years 2021 and 2022 are considered relevant.

Continuity of data

This report is the second in the NDRDD publication series where the timeframes and inclusion criteria for NDRDD reporting are fully aligned with those of NRS's Accredited Official Statistics. This change impacts these statistics in a number of ways:

- The figures shown in this report are based on calendar year of registration of death.
- The main commentary in this report now includes deaths by suicide involving controlled drugs (as per the NRS definition), resulting in slightly higher numbers of DRDs included in each year.
- Inclusion of deaths by suicide in the main commentary means that the findings described in this report exclude years before 2012. This is because the NDRDD data collection definition was changed in 2012 to include deaths by suicide. Data collected prior to this change (2009, 2010 and 2011) have high levels of incompleteness and cannot be robustly compared with data from 2012 onwards. Data for 2009, 2010 and 2011 are shown in the tables accompanying this release.

Revisions statement

As a result of ongoing quality improvements, figures may be revised over time. There are no planned revisions.

Revisions relevant to this publication

None

Concepts and definitions

Detailed information of the deaths relevant to this report is shown in **Annex A** of the NRS report.

Relevance and key uses of the statistics

Planning; epidemiology; research; provision of services and access to services; improved understanding of topic area.

Accuracy

All records are validated when entered into the PHS database. Any issues identified within the record are highlighted to the data provider and corrected before analysis begins.

For varying reasons discussed in greater detail within the report, collection of robust and high quality NDRDD data became increasingly difficult for the reporting periods 2017 to 2022, resulting in a lower level of completeness for the data recorded. These have been discussed and highlighted in the report where appropriate.

Additionally, due to NDRDD reporting being fully aligned with NRS's Accredited Official Statistics, further data quality issues have been introduced across the time series. These issues are also discussed and highlighted in this report.

Completeness

Detailed breakdowns of completeness are available in the data tables.

Comparability

The data captured can be used for year-on-year comparisons. The data tables (**available on the publication page**) include findings from the previous yearly cohorts from 2009 onwards.

However, note that this publication is not comparable to statistics from previous NDRDD publications based on calendar year of death (rather than year of registration of death).

Note also that in this publication certain groupings and categories within specific proforma questions were modified during data processing to ensure the suitability of categories for free-text entries and to ensure that all relevant areas are addressed and included in publication outputs:

- A category has been created for NDRDD Scene of Death Proforma Question: *Where pronounced dead - "Police" (i.e. Police Station).*

- A category has been created for NDRDD Scene of Death Proforma Question: *Place of drug use - "Public Transport"*.
- A category has been created for NDRDD Medical History Proforma Question: *Medical Conditions - "Head Injury"*
- A category has been moved within NDRDD Medical History: From *Medical Conditions* to *Psychiatric Conditions - "Recent Learning Disability/Disorder"*.

Accessibility

It is the policy of Public Health Scotland to make its web sites and products accessible according to published guidelines. More information on accessibility can be found on the **PHS website**.

Coherence and clarity

The report is available as a PDF file with tables clearly linked for ease of use.

Value type and unit of measurement

Counts, numbers and percentages

Disclosure

The PHS protocol on Statistical Disclosure Protocol was followed.

Official Statistics accreditation

Official Statistics

UK Statistics Authority assessment

N/A

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Help email

phs.drugsteam@phs.scot

Date form completed

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Appendix 6 – Early access details

Pre-release access

Under terms of the 'Pre-release Access to Official Statistics (Scotland) Order 2008', PHS is obliged to publish information on those receiving pre-release access ('pre-release access' refers to statistics in their final form prior to publication). The standard maximum pre-release access is five working days. Shown below are details of those receiving standard pre-release access.

Standard pre-release access:

Scottish Government Department of Health and Social Care (DHSC)

NHS board chief executives

NHS board communication leads

Appendix 7 – PHS and official statistics

About Public Health Scotland (PHS)

PHS is a knowledge-based and intelligence driven organisation with a critical reliance on data and information to enable it to be an independent voice for the public's health, leading collaboratively and effectively across the Scottish public health system, accountable at local and national levels, and providing leadership and focus for achieving better health and wellbeing outcomes for the population. Our statistics comply with the **Code of Practice for Statistics** in terms of trustworthiness, high quality and public value. This also means that we keep data secure at all stages, through collection, processing, analysis and output production, and adhere to the Office for National Statistics '**Five Safes**' of data privacy.

Translations and other formats are available on request at:
phs.otherformats@phs.scot or 0131 314 5300.